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ABSTRACT

Thirteen papers constitute the major portion of the proceedings of a conference designed to review and analyze current research, to identify research priorities, and to provide a challenge for the continuing improvement of the planning, conduct, and implementation of research in agricultural education: (1) Research in Agricultural Education from a Different Perspective, (2) Professional Competencies of Vocational Agricultural Instructors: The State of the Art and the Science, (3) Attitude Development as a Part of Teacher Education Programs, (4) Identification of the Occupational Competencies Needed in the Area of Agri-Chemicals, (5) A Cost-Effectiveness Analysis of Selected Vocational Education Programs in Area Vocational Centers and Local Comprehensive High Schools, (6) Factors Related to the Success of New Mexico Vocational Agriculture Teachers as FFA Advisors, (7) The Effect of Instructional Materials on the Leadership and Character Development of Vocational High School Students in Indiana, (8) Improving Research in Departments of Agricultural Education, (9) Performance-Based Teacher Education, (10) The Development and Pilot Testing of Instruments and Procedures for Advisory Councils to Use in Evaluating Vocational Programs, (11) Curriculum Materials from National Defense Organizations, (12) Metric Education Instructional Materials for Vocational Agriculture, and (13) Problems of the Profession Needing Attention. Also included are a conference summary, program, minutes, and list of participants (graduate students, teacher educators, and State supervisors from 11 States). (HD)

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Thirtieth Annual

RESEARCH CONFERENCE IN AGRICULTURAL EDUCATION PROCEEDINGS

CENTRAL REGION

August 3–5, 1976

FAWCETT CENTER FOR TOMORROW
2400 OLENTANGY RIVER ROAD
THE OHIO STATE UNIVERSITY
COLUMBUS, OHIO 43210

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FOREWORD

Faculty members in the Department of Agricultural Education at The Ohio State University are pleased to have hosted the Thirtieth Annual Central Region Research Conference in Agricultural Education on August 3-5, 1976. Conference participants--graduate students, teacher educators, state supervisors, and the President of the National Vocational Agricultural Teachers' Association--were from 11 states. The Conference program was designed to review and analyze current research, to identify research priorities, and to provide a challenge for the continuing improvement of the planning, conduct, and implementation of research in agricultural education. These proceedings indicate the outcomes of the Conference regarding these goals.

Expenses of conducting the Conference were met by an allocation of funds by the Department of Agricultural Education and by a grant from the Research and Graduate Education Committee of the College of Agriculture and Home Economics, The Ohio State University. Special recognition and appreciation is extended the following firms that sponsored meal functions: Ralston Purina Company; Ohio Federation of Production Credit Associations; Ohio Federation of Federal Land Bank Associations; and the Monsanto Agricultural Products Company.

Those of us who planned and hosted the Conference recognize and appreciate the contributions of those who attended and participated. We look forward to the 1977 Conference that will be held at Iowa State University, August 2-4, 1977.

J. Robert Warmbrod
Conference Chairman

ACKNOWLEDGEMENTS

The conference committee wishes to thank Dean Roy M. Kottman, College of Agriculture, Home Economics, and Natural Resources, The Ohio State University, for his warm welcome to conference participants. Through a slide presentation the Dean described activities and programs in the College of Agriculture and Home Economics and the School of Natural Resources. Dean Kottman further explained the impact of the Ohio Agricultural Research and Development Center, the Cooperative Extension Service, Agricultural Education Programming, and the Agricultural Technical Institute upon the growth and development of Ohio's largest industry - agriculture.

As conference secretary I want to publicly express my gratitude to those who assisted in the formation and production of the Conference Proceedings.

Deserving of special appreciation are Georgene Ross and Jeanne Desy for transcribing audio tapes, typing, and proofreading the Proceedings. John Dickens and George Houk are to be commended for assistance in recording panel reaction sessions and audience discussions.

Much appreciation is also extended to those presenting papers during the Research Conference. Excellent cooperation in promptly submitting papers was received. Finally, thank you to all of the reactors and discussants. Efforts were made to capture the highlights of panel reactions and audience discussions in summaries which follow the papers in the Proceedings. I hope you will concur that the summaries are an accurate reflection of your participation in the 1976 Agricultural Education Research Conference.

Lawrence H. Erpelding
Conference Secretary

Keynote Address

Research in Agricultural Education From A Different Perspective

A. H. Krebs, Vice President, Special Projects
Virginia Polytechnic Institute and
State University

Having been dealing with professional activities outside of the field of agricultural education for several years, it was with some surprise that I received the invitation to speak at a conference on research in agricultural education. It took Bob Warmbrod but a few minutes to assure me it was not any expertise in agricultural education research which he sought. Rather, it was what I have observed being done in other disciplines that might provide some clues to agricultural educators as they struggle with the task of building or developing research programs in agricultural education. You may rest assured you will not hear about research in agricultural education other than from a historical viewpoint; that the topic being addressed is that of research program development from the perspective of the chief academic office of a university. The view of research you will hear, then, is that of others outside the field of agricultural education as interpreted by one who is somewhat familiar with agricultural education. The presentation will be developed around three main points: (1) Characteristics of agricultural education research as seen by those in other disciplines, (2) Research program development procedures used by others, and (3) Prospects for agricultural education research to impact on policy, program and practice.

1. Characteristics of Research in Agricultural Education

Please keep in mind the characteristics of research in agricultural education are presented as compared to research in other disciplines - the hard sciences, engineering, agriculture, others - by people who do not know the field of agricultural education well and who function in a much different research environment. Some of the points will sting and some should. Your purpose must be to try to understand <u>why</u> the points were made, to lay the foundation for progress, to identify and select those points which on sober reflection might be judged to have a basis in fact and use them as springboards to research stardom. Most of the points are interpretations of observations of persons in positions giving them some contact with research in a wide variety of disciplines in a university. Again, let me caution you to listen to what others have said about research in agricultural education rather than start to quote the "Summaries of Studies" and reports of research conferences in self-defense. Those who made the points to be presented aren't here to hear you respond. Some of the characteristics mentioned were:

1. There is a tendency toward fragmented one-shot studies.

   Just for kicks, I asked several agricultural educators to name colleagues noted for research on specific topics in agricultural education. Despite some prompting, there were no responses - no persons identified with research in particular problems. This is an expected result from a field in which individuals have not spent much of their research time on specific research problems over a professional lifetime. A program is researched once and the job is considered done for all time.

2. Agricultural education research is dominated by surveys.

   This point was not really given as a criticism, just as a statement of fact. Whether this is true or should be true is for you to judge.

3. Studies lack depth.

   Agricultural educators have a tendency to "skim" a problem rather than study it in depth. I might add that statistical treatment of data does not, by itself, change that impression.

4. Results are reported and applied before fully supported by research.

   This was a rather peculiar comment intended to convey the thought that agricultural educators tend to make premature application of findings - application of findings not yet fully supported by research. There may be too much of a rush to get into print, or the hurry may be pressure from sources of funding. Testing is not as intense as in other disciplines.

5. Funding is the basic orientation for planning.

   Planning based on the vagaries of Federal priorities is not a wise policy. This is, of course, easy to say for those in areas with no funding problems. However, long term planning must be based on long term objectives.

6. Research program development is non-existent.

   This point supports the first point made. In fact, it appears there has not even been an identification of the areas in which research impact is desired. Certainly, there is no strong identification of individuals with specific areas of research over a long period of time.

7. Research is not fully focused on agricultural education.

   This may be one of the reasons why agricultural education research hasn't gained more attention.

8. Confusion exists between research and development.

Development projects are often called research or at the very least research and development. This may, in fact, be the basis or cause of the earlier comment regarding premature application of findings. A funded project is a funded project and a research identification seems more scholarly than a developmental identification. Institutional emphasis in evaluating faculty is also important here.

9. Agricultural education research is limited in applicability to other geographical areas in agricultural education and to other fields of study.

While this was given as a characteristic, the point could be made that the studies were better than the use made of the results. Even some of the long-time follow-up studies did little to change the image of research in agricultural education as just described. While the results of placements in jobs could and should have changed the publicly stated objectives of vocational agriculture programs, the fact is that it took Federal legislation to point the program in the direction indicated by the research.

10. Findings are not applied.

Much research fills shelves and collects dust.

2. Research Program Development

Given some truth to the points made by others who struggled mentally to respond to my questions, what can be done about it? The suggestions for consideration which follow are really characteristics of research programs in disciplines which have had years of programmatic research and are simply re-stated here as possible courses of action. It will be fairly obvious that no "instant miracles" are available. However, given the belief that agricultural education will survive as a discipline, it is up to you who are here now to begin the shaping of the research in agricultural education for the many, many years ahead. Again, please keep in mind that you are hearing the suggestions of non-agricultural educators who are genuinely trying to be of help. There was no other reason for any response at all and those making the suggestions had no way of knowing whether a suggestion could be implemented.

1. Commit the department to a programmatic research emphasis.

Perhaps this suggestion should be a summary statement rather than an opening statement. It may even seem redundant. But commitment to programmatic research has so many far-reaching implications that the decision to travel that route should not be made lightly. Programmatic research necessitates:

- focusing research planning on the agricultural education/vocational agriculture program and ignoring funding in the long-time planning phase.

- analyzing agricultural education for areas/problems/topics with potential for fruitful research.

- working to get a department well known for at least one area of research - a commitment to an area or areas of major emphasis. Accept the fact that to be top in every area of research is not possible.

- providing continuing support for faculty to improve research capability - time to audit courses - funds for attending workshops, etc.

- identifying the research time commitment for or of each faculty member.

- placing limits on areas of emphasis according to faculty interests and numbers.

- doing research in depth in areas identified - building on research findings in the same area. Instead of listing problems for others, pursue them yourself.

- relating requests for proposals to the research program and, however relectantly, not preparing proposals for projects not compatible with the research program of the department.

- developing an organized effort to review research in related disciplines for implications and ideas.

- using small, unfunded projects for pilot efforts and to build the time and effort base needed to secure funding for the larger effort. Some colleges have set up "small grants" programs to assist departments in this direction.

- defining carefully the purposes for the research program as well as for the individual projects.

- developing a concept of research as <u>leading</u> - a belief that research can generate the power for an idea whose time you can help make come.

2. <u>Select a department head compatible with the research orientation of the department</u>.

It's a real learning experience to observe the selection of a department head in a research oriented department - and to observe what happens when a mistake has been made. Once having observed the latter, it is easy to understand why some of the outstanding research

faculty become so much concerned about the kind of head to be appointed. A change of department head often means a complete redirection of the research effort over a period of ten to twenty years. Sometimes, of course, this change is needed.

3. Recruit faculty to fit into departmental research programs.

Even departments in disciplines with almost no chance of securing outside grant funding recruit faculty to fill identified needs in their research programs. Sometimes this need may be an area of research not being tackled, sometimes it means bringing in someone to work in the same general area as others but on different topics.

If you can afford the cost, the quickest way to build a research program is to buy it - recruit the successful researcher, hopefully with a grant that can be brought along. Of particular value are those with the contacts needed to practically guarantee funding.

Faculty recruited for research often need "start up" time. Many research departments give new recruits a year or two to get their research on the road. Tough evaluation follows.

4. Recruit graduate students for specific research projects.

When you have funded projects, recruiting graduate students for specific research projects is almost automatic. Even without funded projects, however, the recruitment could well include emphasis on dissertations to be developed within the framework of the departmental research program.

Actually, graduate students will appreciate and value knowing their research will be a part of a larger whole and that they will therefore be able to devote most of their time on meaningful research rather than on trying to define their problem. Agricultural educators may have focused too much on developing abilities to identify problems to the detriment of doing meaningful research.

5. Develop the proper mix between basic and applied research.

In the first place, develop your own definition of basic and applied. The definitions used by other disciplines won't help. Think of basic research as developing new knowledge about your program and your students. It would probably be descriptive rather than problem oriented - sort of exploratory. From it, you would identify potential areas for research. It would be used as the basis for formulating and modifying long-time research program plans.

Use applied research to test hypotheses in the field. Do the testing on a sufficiently rigorous and extended basis to lend it credibility. Applied research projects can develop from findings in related fields which need to be tested for application in agricultural education.

6. Develop strong research relationships.

While you do not want internal competition (departmental) on specific research problems, it often is very profitable to share problems and concerns with others. And it appears that many co-authors in other disciplines are from other institutions except, of course, for the doctoral dissertation publications. Research meetings such as this one can be useful instruments for developing and maintaining research relationships. This, too, requires some continuing programmatic effort on the part of the researchers. This is especially important for small departments which should develop research programs in cooperation with other departments.

Senior faculty are often assigned to serve as the mentors for new faculty to help them get started in research.

Strong research partnerships can also be developed with the public schools and with other disciplines - again, it requires a programmatic orientation for a long-time relationship.

Strong relationships are also needed with funding units. The vita of the faculty should be sent to funding units offering the services of the faculty as readers.

Work with the agricultural experiment station and other university research units.

Finally, establish relationships for dissemination where it will do the most good. Based on my brief interviews in preparation for this talk, it would appear that the global approach does little good. Dissemination should include analysis of research fundings for possible use and applicability to other fields.

7. Teach graduate students and young faculty the need to develop a life-time research focus and commitment.

If there is one theme running through these remarks, it is that each person who would be known for research needs to identify an area of interest and then work in that area. The chances of success increase with long-time effort. Change to another area would come only with persuasive evidence of a need to do so. Long-time effort will increase chances of major contributions to the field, will attract graduate students, will make funding more likely, and will improve chances of meaningful cross-disciplinary research and applications. And graduate students need to work with mature research scholars to develop a research attitude.

The selection of the area for a life-time commitment is, of course, a very serious decision.

8. Analyze research completed to determine use made of findings.

9. Involve bright undergraduate students in research.

3. Prospects for Impact in Agricultural Education Policy, Program and Practice

The prospects for meaningful impact on policy, program and practice are always present when research is conducted well. However, the prospects are not very great unless specific direction is given to developing research program which:

- focus on the areas where impact is desired.
- provide for in-depth study.
- are based on research problems selected, in part, because of judgements on how the research can help individuals and society. This would help in funding, also.
- focus on agricultural education. You can't get the impact desired in agricultural education if your effort is in other disciplines or in technical agriculture. A research program in agricultural education will help in taking advantage of funding possibilities in other disciplines and indeed in Federal funding for vocational education. While some broadly oriented vocational education research is needed, to do no research in agricultural education specifically contributes more to the homogenization of vocational education than does the direct advocate of such homogenization.
- include provisions for national coordination of the research activity and a national exchange of ideas.

Summary

We have looked at research in agricultural education through the eyes of researchers and research administrators not in agricultural education. Noteworthy was the failure of these people to denigrate the research being done in agricultural education. The characteristics of research in agricultural education as seen by others seem to speak continuously to the need for the development of programs of research with all that that implies. Programmatic research dictates certain kinds of administrative activity in order to implement the concept. And, finally, the impact you desire for your research policy, program and practice necessitates the setting of specific objectives or purposes for the research program and within the research program. Without an objective driven research program, what you see now as research in agricultural education is what you will continue to have. In other words, if you wish to be known for your research in agricultural education, you will have to be serious about your dedication to that objective.

Summary of Question and Answer Period
Dr. Kreb's Presentation

1. Should each faculty member have a time allotment in research?

Every faculty member who teaches in a university has a responsibility for scholarly, creative effort of some kind. Faculty can contribute scholarly effort through thoughtful, philosophical writings. Everyone need not be involved in grantmanship. Everyone can and should conduct unfunded research; the small studies that might serve as the foundation for larger studies or entry into grantsmanship.

2. What can be done about the limited opportunities for post-doctorate work in agricultural education?

Most other disciplines are no better off than is agricultural education in this respect. The lack of post-doctorial opportunities can be somewhat overcome by giving new faculty members a couple years' start up time to get their research program going. Provide time for new faculty to attend research classes and workshops. Also provide a senior researcher as mentor for new faculty members.

3. Where are we in disseminating agricultural education research findings for impact?

While we disseminate research findings on a limited basis, we haven't identified what we do well enough, we haven't taken the specifics and developed them into a vivid picture showing how programs, individuals or society will be helped. Nor have we done that in relation to other fields. We must identify our successes in agricultural education and tell others so they can make use of it.

4. Sometimes evaluation gets shortchanged because we have to plan for the next project. Is it important that we follow-up research conducted ten years ago, for example?

If you identify an area of research for a programmatic effort, you will review all of the literature in the area. This will result in identifying more problems than you can research in a lifetime. Commit yourself to one area of research.

Professional Competencies of Vocational Agriculture Instructors: The State Of the Art and the Science

Glen C. Shinn, Associate Professor
Agricultural Education and Agricultural Engineering
University of Missouri-Columbia

The primary purpose of this paper is to focus on a review of the literature which was addressed to teacher competency. First, we will look at research involving the vocational agriculture teacher; secondly, we will review selected works dealing with the vocational teacher; and finally, we will review several investigations of general teacher education which have implications related to our problem.

The objectives of this paper are:

1. To review selected literature dealing with teacher competence and draw conclusions concerning the findings.

2. To synthesize the research conclusions and suggest a direction for future research activities.

There is certainly a wealth of information which relates to the interactions of the teacher and the student. One of the first tasks is to identify definitions which focus specifically on teacher competence.

> Teacher competence is the ability of teachers to accomplish the (unspecified) goals of education, and it is measured best by examination of previous experiences or of demonstrated level of achievement. (Rosencranz and Biddle, 1964:238)
>
> ... a characteristic of teacher personality that leads to achievement of some (usually specified) goal of education. This is best measured by personality tests. (Rosencranz and Biddle, 1964:239)
>
> ... one or more abilities of a teacher to produce agreed upon educational effects. (Biddle and Ellena, 1964:18)
>
> ... the ability of the teacher to behave in specified ways within a social situation in order to produce empirically demonstrated effects approved by those in the environment in which he functions. (Rosencranz and Biddle, 1964:240)
>
> and finally, the capabilities of an educator to perform an educational task. This would include the knowledge, skills, and abilities that have been acquired through professional study and/or experience, and personal characteristics that are prerequisite to competence development. (Norris, 1974:9)

By defining competence in such a way, we have tried to distinguish it from teaching effectiveness, methods and materials, leadership, and management. In doing so, hopefully we can circumvent Biddle and Ellena's (1964:2) objections that "...teacher effectiveness is so complex that no one today knows what the COMPETENT TEACHER is ... we do not know how to define, prepare for, or measure teacher competence".

While reviewing the literature, you will observe that most research has probed one or more of the following dimensions: (1) personal characteristics of teachers, (2) teacher's interaction styles and instructional procedures, (3) the perceptions of self, and/or (4) the perceptions of others.

> If we really believe that competent, dedicated teachers are the essential ingredients of a high quality and effective agricultural education program, supervisors and teacher educators must deal promptly with some of the major problems and issues concerning the selection, preparation, and professional improvement of teachers. (Warmbrod, 1970:163)

The Vocational Agriculture Teacher

A study of Refus Beamer (1956) attempted to evaluate preservice courses in agricultural education at the University of Tennessee. As a part of the investigation, a questionnaire was developed to determine self perceived abilities of vocational agriculture teachers. The survey identified twelve "ability areas" which are essential or desirable for teachers: (1) establish and maintain relationships, (2) determine community needs, (3) prepare agricultural programs, (4) maintain advisory council, (5) maintain department facilities, (6) teach high school vo-ag classes, (7) direct SOE programs, (8) direct farm mechanics programs, (9) advise the FFA, (10) provide student guidance, (11) organize young and adult classes, and (12) continue professional growth.

Gadda (1963) completed a study of similar design in determining the perceptions of 66 beginning vocational agriculture teachers, their school administrators, and state supervisors. Of the 160 competencies, establishing and maintaining personal, professional, and community relationships ranked as the lowest categories in terms of perceived importance for beginning teachers.

These studies typify many of the earlier investigations in outlining areas of competence as perceived by the vocational agriculture teacher. We can immediately see the paradoxical results in similar research. The findings are related to the research method, the manner in which the research questions are couched, and the techniques employed in collecting the data.

To better understand the teacher's professional role, Drake (1962) completed a correlational study of the perceptions of 78 vocational agriculture teachers and their superintendents related to 102 role definitional activities. He found they had similar perceptions in eight of the role areas

but there were significant differences in the perceived expectations of professional roles both within and between the groups. Of the 102, thirty-eight roles had mean values of 3.0 or higher on a five point scale. Ten years later, Schumann (1972) investigated the variations of perceived roles among teachers and principals in Texas. There were significant differences (.05) between the teachers and principals on 29 of the 43 role items. The greatest differences included program policies, school responsibilities, and professional responsibilities.

In a study of similar design, McComas (1962) investigated the perceptions of 15 vocational agriculture teachers who were rated as "most efficient" and 15 teachers rated as "least efficient" by the state supervisory staff in Ohio. When compared to corresponding school administrators, the "most efficient" had a greater agreement of their role expectations. In describing the "most efficient" teacher, McComas concluded that they were more active in the community, conducted more young adult classes, earned more college hours, and taught in slightly larger high schools with larger vo-ag enrollments.

Using the "essential competencies" which were identified by McComas, Todd (1967:161) reported that:

> The role perceptions of beginning teachers were basically internalized for the teacher's position, that is, they entered the local vocational agriculture department with a reasonable degree of understanding of their role.

and

> Beginning teachers held role perceptions for the teacher's position very similar to the successful experienced teacher which further substantiates a degree of internalization for the teacher's role.

However, Todd found significant differences between beginning and experienced teachers in the areas of guidance and counseling (.05), young and adult farmer programs (.01), school and administrative relationships (.01), developing farming programs (.05), teaching farm mechanics (.05), and classroom teaching (.05).

Using a sampling from five professional education groups, Steward (1969) examined the importance of twelve role items and 78 activities with respect to the emerging role of the teacher. He found significant differences (.05) between groups on 26 of the 78 role activities. Interestingly however, none of the activities were rated as "extremely important" by the Louisiana sample.

Using the same general type of professional competency list, Stoller (1971) compared the self-perceptions of vocational agriculture teachers and agricultural extension agents in Nebraska and Kansas. Stoller found many of the competencies were perceived as being needed and he recommended that they be included in a central core preservice training program.

While investigating the effectiveness of student teacher, Fuller (1963) identified 23 groups of observable behavior which was critical. "Highly efficient" student teachers were interested in society and self and had favorable attitudes toward pupils and people in general. They were characterized as being fair, kindly, alert, attractive, responsible, steady, and poised. The "below average" student teachers were described as dull, stereotyped, uncertain, disorganized, inflexible, and narrow.

Using the perceptions of West Virginia Vocational Agriculture Teachers, McGee (1967) identified eight professional areas which rated as above average. They included instructional activities, supervised work experience, instructional materials, organization and planning, FFA, off-farm agricultural occupations, relationship to school, young and adult farmer programs, and public relations.

In a national sampling, Norris (1975) identified 109 competencies which had application for secondary vocational agriculture teachers. Seventy-one competencies were classified as instructional, 19 dealt with coordination, and 19 were in the area of management. Using 70 percent consensus, fifty-five of the 109 were rated as "essential" using a self perception mail-out questionnaire. There were differences in the level of agreement between states with the highest levels of agreement in the Pacific, Central, Southern, and North Atlantic respectively.

The instructional competencies with the highest consensus included determining instructional units (93%), selecting and/or developing instructional content for a lesson (93%), determining student needs and goals (93%), evaluating one's own techniques and methods of teaching (92%), and evaluating student's progress in class, home and laboratory assignments (90%).

The coordination competencies with the highest consensus included developing procedure to insure student-learner's safety and protection (77%), assisting student-learners in job orientation (65%), discussing on-the-job training progress reports with students (63%), and involving cooperating employer in the evaluation of student-learner's performance.

The management competencies listed highest were implementing safety procedures (95%), maintaining equipment and tools (94%), maximizing use of student's time and equipment (89%), maintaining a system for cleaning and maintaining the laboratory (89%), and arranging mechanical details of the classroom and laboratory (80%).

In a five year study of the perceptions of 127 first year teachers, Guiler (1970) investigated ten areas of competency involving 68 professional abilities ranging from "using an advisory council effectively" to "maintaining a clean shop". Using a seven point scale, teachers rated their abilities at the beginning and end of the first year. There were substantial gains in most areas during the year as the young teacher gained confidence in his role. Guiler recommended a strong inservice education program to improve and reinforce teacher competence. Highlighting the need for inservice education, Bail and Cardozier (1967:254) concluded that "one might more closely approach adequate mastery of technical material than professional competencies in a preservice program".

Addressing the issue of teacher competence, Warmbrod (1970:164) wrote:

> At least we know that specialized knowledge of subject matter, the possession of specific skills, or the employment experience in a relevant occupation, though necessary, are not sufficient to produce an effective (competent) teacher.

The Vocational Teacher

Again, there is an abundance of material related to the vocational teacher and the competencies which are judged as essential for success. Many studies were completed by EPDA Fellows and consequentially speak to the competencies of the vocational leader and administrator.

Speaking to the vocational instructor, Miller and Rose (1975) listed six "broad qualities" which were absolutely essential. The list included: (1) competence in the subject being taught, (2) mastery of the techniques of instruction, (3) resourcefulness and creativeness, (4) knowledge and application of evaluation procedures, (5) the desire to teach, and (6) ability to develop good personal relationships.

In assessing the professional education competency needs of teachers of vocational-technical programs in post-secondary schools in Kansas, Erpelding (1972) found a large number of similarities in the levels of proficiency related to 45 competencies required by teachers in six occupational areas. There were no significant differences (.05) among twenty-five of the 45 competencies with regard to the opinions of teachers in six different occupational areas. Agricultural teachers perceived a need for thirty-three of the 45 competencies be made available through inservice education programs. Dr. Erpelding recommended cooperative inservice efforts by teacher education with the state staff providing leadership and finances.

Assuming that teacher roles will be differentiated and more specialized, Moss (1972) developed a theoretical set of five categories and the desirable competencies for beginning vocational teachers. The five categories include: (1) professional competencies, (2) subject matter competencies, (3) knowledge acquisition competencies, (4) general competencies, and (5) personal characteristics. Moss hedged, however, in his prescriptive approach by adding:

> Some competence is needed in each category by all beginning level vocational teachers, although it is recognized that the relative amounts in each will vary in accordance with the career orientation of the teacher and the nature of the vocational mission.

A number of studies (Martin, 1972, Ray, 1972; Spanzini, 1972; and Sundstorm, 1972) focusing on competencies for administrators and vocational leaders were conducted in the EPDA program at Oregon State University. Ward (1971:4056-A) identified 40 competencies which "... in all probability, are essential to the adequate performance of occupational education leaders".

Lindahl (1971) surveyed instructors from 40 community colleges in the northwest. Using a competency listing, 54 were determined to be significant for teachers in four program areas. Meyer (1970) found significant differences within levels of administration and on both the competencies needed and possessed. Meyer reported most competencies were gained on-the-job.

The competency-based study which has the most time and energy invested is the Performance-based Vocational Teacher Education Curricula Program based in the Center for Vocational Education. A programmatic research effort by Cotrell, et. al. (1972) identified the performance requirements of the conventional vocational service areas. Using techniques including introspection, interview and critical incident to identify the elements, the data were merged into 384 performance elements. These elements were then grouped into ten categories including: (a) program planning, development and evaluation, (b) instructional planning, (c) instructional execution, (d) instructional evaluation, (e) instructional management, (f) guidance, (g) school-community relations, (h) student vocational organizations, (i) professional role and development, and (j) coordination. This research base has yielded approximately 100 modules designed for use in preservice and inservice vocational teacher education programs.

The research base for the modules provides objectives that

> focus on competencies verified as important for successful vocational teachers, and the module design requires demonstration of ability in an actual school setting... (PBVTE: 1976).

General Teacher Education

The perennial question of professional teacher education has been "How can we teach so that knowledge acquired by our pupils will be retained by them until needed in later life?" (Lancelot, 1929:6). In framing the question, Lancelot recognized fifteen teaching skills which hold interest and give direction to the thinking of the student. This and other studies focused the question on the actions of the teacher. Witty (1947) reported on the results of over 12,000 student responses to an essay contest "the teacher who has helped me most". An analysis of the essays indicated the teacher's personal style in communicating what they know ranked as most important. Student's appeared to take for granted that a teacher "knows" the material.

A classical study involving 6,000 teachers in 1,700 schools and 450 school systems was reported by Ryans (1964). The study identified three major patterns of classroom behavior which were investigated using direct observation of the teacher. Seven additional teacher characteristics were identified and data were collected using self inventory responses. Scores indicated that "highly assessed" teachers received favorable opinions of students, used democratic procedures, used child-centered philosophy and had superior verbal understanding and emotional stability. "On the other hand, characteristics that distinguished the 'lowly assessed' teacher group suggested that the relatively ineffective teacher is self-centered, anxious and restricted" (1964:89).

Combs (1965) continued the popular approach in identifying and defined good teaching by describing the characteristics of "a good teacher". Combs identified 14 characteristics that a good teacher must have ranging from "knows the subject" to "have convictions". Hamachek (1969:343) reacted to the criticisms of Biddle and Ellena (1964) by concluding that "a good teacher is a good person" and "the good teacher is flexible". As simple as that! Shipley (1972) in the chapter "Fundamentals of Good Teaching" contrasts the traditional and the progressive teacher. Shipley (1972:23) outlining 14 principles of good teaching and concluded by saying "Each time one systematizes principles into a new configuration, a person is gaining new insights into the primary needs of children and teachers". Lembo (1971:73) in a book entitled Why Teachers Fail characterized a competent teacher by the following:

1. He can engage students in an open and trusting relationship by his capacity to listen and accept.

2. He is skilled in the use of different diagnostic, planning, facilitative, and evaluative procedures and is knowledgeable about their limitations;

3. He is exprimental in his general attitude toward identifying and providing appropriate learning conditions; and

4. He can look at his own beliefs, feelings and behavior openly and can find ways to make them more constructive to himself and others.

With a tactical change, Peter (1975:3) identified the problem very succinctly. "The difficulty with lists of such traits (eg. Combs, et. al.) is that factors have very often very little to do with the actual process of effectively teaching children".

Peter continues "the teacher's competence cannot be evaluated by grades earned, courses completed, or time spent ... but rather must be determined by the effects of the teacher's performance of children's learning". Popham's (1971) research is supportive of the lack of significance attached to certification. Using 2,326 students in three courses with 57 certified teachers and 57 non-certified teachers, Popham tested the null hypothesis of teacher difference. Using explicit instructional objectives and sufficient planning time, the teachers instructed the class and learners were post-tested to estimate the teacher's skill. Popham (1971:117) concluded "there are no significant differences between certificated and non-certificated teachers in bringing about specified behavioral changes in students (1971:117).

Peck and Brown (1968) follow to render the coup de grace by concluding that there was no solid foundation for research in teacher education into teacher preparation since there was neither a sufficient body of empirical observations nor a single, defensible theoretical framework.

Summary and Conclusions

Although the findings of the reviews of literature is "a mixed bag of tricks", all is not lost. We have identified, often in long, laborious listings, the characteristics of the teacher. We have a wealth of data related to the perceptions of what is required for success. And we have systematic observations detailing the tasks which teachers use in presenting learning experiences. McNeil and Popham (1973:240) write "... we now need experiments showing that the teacher's use of these variables can indeed produce predicted effects in the learner."

If we are to fully understand the effects of the variables, we must follow the examples of the sciences and focus on the variations in the yield. McNeil and Popham (1973) indicate that performance tests coupled with other criterion measures conducted in a clean experimental setting will give estimates of the efficiency of the variables. We must also standardize our instrumentation and precisely describe both the treatment and the variables.

In conclusion, we have the foundation for research but if we are to understand the mystery we must devote more full-time energies toward its solution. The answer to the question "What makes a good vocational agriculture teacher?" will never be fully answered by the weekend warrior.

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Summary of Comments by Panel of Reactors

Kenny Gray, The Center for Vocational Education

While Dr. Shinn's paper was not meant to be all inclusive of competency studies conducted in agricultural education, vocational education or education, it gives evidence of a rather sustained effort in agricultural education. References cited were published over a period of several years as indicated below:

Educational Area	Previous to 1960	1961-65	1966-70	1971-75	Total
Vocational Agriculture	1	4	6	5	17
Vocational Education			1	10	11
Education	2	5	3	6	16
TOTALS	3	9	10	21	44

Getting a group of agricultural education researchers together, such as in this meeting, suggests the question, where is competency research being done? A tally of the 12 research studies conducted in agricultural education and cited in this paper follows:

Institution	Number of Studies
Ohio State University	3
Michigan State University	2
University of Illinois	1
Kansas State University	1
Cornell University	1
University of Tennessee	1
Texas A&M	1
Louisiana State University	1
University of Nebraska	1

Competency studies are useful in determining what teachers ought to be doing, designing objective teacher evaluations and developing an objective approach to teacher credentialling.

In working with competency statements, I have become sensitized to several "bewares." One that intrigues me is the mix of categorical designations used. One or more of these categories are generally used: 1. functions performed by the teacher; 2. knowledge areas; 3. miscellaneous; and/or 4. other. This mixture makes it difficult to summarize studies or make data across studies cumulative to meet the needs of the profession.

Secondly, terminology used to describe competencies is a mixed bag. Universal terminology that all can understand and relate to needs to be adopted. Single, active voice verbs ought to be used. The verb should be introduced early in the statement with I, the subject, understood. The object, thing acted upon, needs to be clearly identified. Qualifying phrases should be optional, but used when necessary to clarify the meaning. Avoid such phrases as "as needed" or "as appropriate."

Some suggestions for competency researchers are: 1. Press each competency statement for clarity. Each statement should have a definite beginning and ending. The concept should be observable and teachable. 2. Use tested, detailed, guidelines when formulating and evaluating or merging competency lists. 3. Use the validated work of others instead of reinventing the wheel. 4. Advise with care doctorial students interested in competency research. Help them use their time wisely instead of adding to an already muddled data base.

Dr. Shinn's closing statement, "We can't solve these problems with weekend warriors," gives rise to the need for in-depth development and further studies through major institutional efforts. Teams of faculty within an institution or across institutions should confront these research challenges.

Eddie A. Moore, Michigan State University

Dr. Shinn has provided an excellent review of teaching competency research pertaining to the vo-ag teacher, the vocational teacher and the general educator. We in agricultural education need to agree on some basic elements for arriving at competency based teacher education.

1. We need to identify teaching competencies which are likely to have the highest payoff in terms of desirable pupil change.
2. Preparation activities for the attainment of specific competencies need to be designed.
3. Assessment techniques to determine the degree of mastery of the competency must be developed.
4. Competencies must be validated in terms of correlations with pupil outcomes.

The phrase Competency Based Teacher Education has been around our profession since 1972. Some departments of agricultural education have developed their CBTE systems; some are in the process of identifying necessary competencies and others have not been concerned. Then we must ask - What research is needed?

1. We need to develop systems for measuring teacher behavior. Longitudinal studies to determine what makes a good teacher would be helpful.
2. We need to evaluate the effectiveness of CBTE training systems. Let's determine which delivery systems are effective.
3. We need to develop systems for evaluating performance of graduates of CBTE programs.
4. We need to develop various processes to infuse CBTE into existing teacher education programs.
5. We need to develop training programs for faculty who will utilize CBTE materials.

Gary Moore, Purdue University

Dr. Shinn's paper pointed out that little progress has taken place in teacher competency research in the Central States Region since the Michigan State Conference two years ago. The concerns and suggestions for research listed in the Michigan State conference report seem to be as valid today as they were in 1974.

Let's consider the methodology used in some of the studies cited in Dr. Shinn's paper. A couple of studies reported the vocational agriculture teacher's perception of his job responsibilities and competencies needed. Perceptions alone may not be an accurate reflection of the competencies needed by the teacher. A couple of studies reported perceptions of administrators and teachers. It seems if there was a correlation between the two that's what the teacher should be doing. High correlations may not necessarily denote essential or even desirable competencies.

It may be helpful to review other competency studies in agricultural education not cited in Dr. Shinn's paper. Dick Jenson at the University of Wisconsin gathered 416 competencies from a review of literature. He consolidated them into a list of 121. After a panel of experts reviewed the list, more than 400 teachers reviewed and prioritized the competencies.

Eddie Moore's doctorial study "Professional Educational Competency Needs of Three Groups of Vocational Agriculture Teachers in Ohio" conducted at Ohio State University dealt with competencies needed by four year college agricultural education majors, four year college technical agriculture majors and non-college graduates. The study determined the three groups' perceptions of importance, perceptions of degree of proficiency and need for inservice education.

Also at Ohio State, Vincent Feck conducted a study to determine the characteristics of professional competency needs of teachers of agriculture in two year technical institutes or colleges in the United States.

Studies in other vocational fields which might be helpful are Lucy Crawford's study of competencies needed by distributive education teachers conducted at Virginia Polytechnic Institute and Julia Dalrymple's work at Ohio State to develop the Treebook. The treebook used nationwide is the result of a twelve year study of competencies needed by home economic teachers.

What we need to do is review all competency lists available, compare and combine them. After we have identified those competencies needed, they should be tested out - validated. My dissertation, "Teaching Effectiveness of Two Groups of Beginning Teachers of Vocational Agriculture," used the pre-test and post-test to determine how much students learned after participating in a thirty minute lesson. The same can be done to validate competencies to determine which are essential. After determining which competencies are essential let's test to see which is the best way to deliver these competencies to prospective and present teachers.

Dr. Shinn did a good job in reviewing the literature. He's laid a good foundation for us. Now we need to build upon it.

Summary of Discussion Following the Panel Reaction

Additional competency lists are not necessary. Instead the terminology needs to be standardized.

The inference has been made that if the teacher teaches effectively, the students are going to learn effectively. To what extent are the validation processes now zeroing in on student learning and establishing validity based on the extent to which students do learn when they are exposed to certain teacher competencies and behaviors? This has not been accomplished in agricultural education or in vocational education.

Perhaps we are trying to over scientifically look at a process which may be as much artistry as a science. In working with 30 supervising teachers last week, I'm sure there were 30 artists present all of which had learned to paint with a large brush. They know a lot of the answers to the question of what makes a successful vo-ag teacher. Research in this area seems to be more basic than it is applied.

It seems that coordination is the major aspect lacking in teacher competency research in the Central Region. There is a need for someone to give leadership to a coordinated effort if teacher competency work is to attain prominence in the Central Region.

It appears that most teacher competency work has pertained to the education of youth. Through research we should etermine whether these competencies are appropriate to the effective teaching of adults.

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Attitude Development as a Part of Teacher Education Programs

David L. Howell
Purdue University

The affective aspects of a teacher's personality have long been regarded as important traits of teachers. This would include the enthusiasm the teacher demonstrates for his subject, his concern for his students, his excitement about the act of learning and his love for his work. These motivational and emotional features of a teacher are separate from his comprehension of the subject matter. The affective aspects effect the teacher's ability to help the student learn. It determines what a teacher is likely to do or will do rather than what he can do under specific circumstances.

There are a number of considerations to remember when developing programs which are to have an effect on teacher attitudes. To begin with, a negative attitude toward change is most frequently the biggest problem to overcome when introducing a new program or teaching procedure. People want to keep that which is familiar and comfortable. This is one reason why teachers overtly or covertly sabotage the introduction of a new program or teaching procedure. Teachers are not receptive to a teaching style which differs greatly from that which they were trained or accustomed. We as introducers of change must not only be concerned with the substance of the change but also with the attitude of the effected individuals toward change.

Evidence suggests if we involve teachers in planning change (the new content and procedures) their attitudes will be more favorable toward accepting the change or if activities are provided which allow total immusion experiences rather than someone providing an explanation. Careful planning and attention to the attitudes of the teachers involved in the adoption of the new idea is absolutely essential.

A. A review and analysis of the research that has been completed.

In fifteen years of publication, our AATEA Journal has published only sixty articles that deal directly with teacher education programs out of a total of 207 according to Crunkilton (1976, p. 16). This would indicate either a lack of reporting through this journal of research of this nature or a lack of research conducted in this area. It has also been found that in all areas of education few studies have been conducted to evaluate instructional programs from the standpoint of the affective domain. Krathwohl, Bloom, and Masia stated:

> When we looked for evaluation material in the affective domain we found it usually in relation to some national educational research project or a sponsored local research project (for which a report had to be written). Only rarely did we find an effective evaluation technique used because a group of local teachers wanted to know whether students were developing in a particular way. It was evident that evaluation work for affective objectives was marginal and was done only when a very pressing question was raised by the faculty or when someone wished to do 'education' research (1964, p. 15).

To date there are many researchers working the area of attitude development but few in relation to teacher education. Yet when we consider the cognitive domain and the effect the teacher is having upon the student, we must also consider the affective domain.

> The cold, hard, stubborn reality is that whenever one learns intellectually, there is an inseparable accompanying emotional dimension. The relationship between intellect and affect is indestructibly symbiotic. And instead of trying to deny this, it is time we made good use of the relationship (Brown 1971, p. 11).

1. Effects of Course Work on Student Attitudes

Jacob (1957, pp. xii-xiii) compiled the results of a number of evaluations on attainment of affective objectives in an effort to determine if attitudes of students were changed by college courses. He was specifically interested in determining the influence of various types of social science instruction upon students' value patterns. Jacob made a selective survey of programs of instruction to locate those programs thought to be important in affecting student evaluative courses and curricula. The findings of the study showed "...no specific curricular pattern of general education, no model syllabus for a basic social science course, no pedigree of instruction and no wizardry of instruction method which would be pattented for its impact on the values of students (Jacob, 1958, p. 11)." The limitations of the study present some questions as to the reliability of the results. Jacob stated that more complete, representative and comparable data were needed which suggests that generalizations should not be made from the data to other populations.

A study of similar nature was completed by Hoover and Schutz (1968, p. 300) which showed an attitude change as a result of an introductory education course. The study was an effort to alter attitudes by emphasizing recognition and evaluation of basic assumptions. Seventy-five college students were used in the study, all of whom were enrolled in their first professional education course. A semantic differential instrument was used with a one group pretest-posttest design. The results showed significant gains at the .05 level of ten of the thirteen concepts tested. The study is limited by the fact that randomization was not used in selecting the sample. Also, the study did not include a control group and since the sample was limited to two classes of students enrolled in education, the data can not be generalized to include all college students. The results of the study are in contrast with what Jacob found and strongly suggests the need for further study of the effect of educational programs on attitudes.

A portion of the study Evaluation of Man and Culture, by Gardner and associates (1967) was an investigation of feelings, attitudes, and values by use of a Values Test designed to determine if students changed their point of view during the time they were taking the course. The tests used sixty-three statements to which the students responded on a five point scale ranging from "strongly agree" to "strongly disagree." Changes in the attitudes of students were determined by comparing the pre- and post-test patterns.

> While the "Man and Culture" course is not designed to teach attitudes toward specific social issues, aspects of the course are intended to encourage students to develop certain general "human" values and to adopt a "social science" posture toward data. Thus, students are not told what their attitudes toward minorities must be, for example, but they are encouraged to believe in concepts like "equality of opportunity" and to accept cautiously and critically the conclusions of

> social scientists regarding the causes of certain types of behavior by minority group members. The course, then, could be seen as encouraging certain types of general value positions (Gardner et al., 1967, p. 232).

Comparisons were made in this study between the experimental and control groups from the pretest to the posttest. Chi-square was used as a method analysis and showed treatment groups to differ significantly on twenty-nine of the sixty-three statements from the test. Examination of the frequency distribution of the responses showed the direction of change was toward the position supported by the experimental group in twenty-eight of the twenty-nine statements that showed significant difference. The researchers concluded that:

> Since legitimate questions were raised regarding the validity of the Values Test, one can not conclude that the course alters the value system of those who study it. However, the magnitude of the difference between E (experimental) and C (control) classes on this measure again demonstrate (sic) the powerful effects of the course, even though the test may have measured cognitive rather than effective learning (Gardner et. al., 1967, p. 279).

In a study by Burlando (1970) of the effect of a reading education program upon the attitudes of teachers in regard to teaching reading to the disadvantaged, significant results were identified. Likert-type attitude scales were constructed to measure teacher attitudes. The scales were administered to both the experimental and control groups using the non-equivalent control group design. The results showed that significant attitude increases were displayed by all teacher groups regardless of sex, geographical area and grade level on the four scales which deal with black people, black students, teaching reading, and teaching reading to black students. No signifiance was found on the scales relating to teachers' self-concept and the teaching profession.

Burlando suggests the findings justify consideration of providing preservice and inservice courses for teachers which provide experiences designed to develop, alter or reinforce certain attitudes toward their students and the classroom environment. It would appear that courses relating to attitude change can be effective.

2. Effects of Simulation and Work Experience on Attitudes

Huber (1972) investigated the effects of a specific simulation technique in an attempt to determine whether attitude and empathy could be changed significantly in a positive direction. A posttest--only control group design was used with 160 randomly selected student teachers. The experimental groups were shown films from the Teaching Problems Laboratory by Donald Cruickshank.

The Minnesota Teacher Attitude Inventory and the Affective Sensitivity Scale were administered to 114 of the original 160 student teachers. Significance was found in one of the four hypotheses tested. This hypothesis related to empathy scores between secondary student teachers receiving simulation and secondary student teachers receiving no simulation as measured by the affective sensitivity scale. Huber concluded that simulation had a significant effect on the empathy level of secondary student teachers and recommended that teacher education programs include experience in interpersonal relations. He also suggests that prospective teacher candidates receive attitude tests to determine their suitability for teaching.

Huber's research design was very strong but many of his recommendations appear questionable because of a lack of research support. Because he relied solely on the use of films for the simulation technique, the approach may have been too narrow.

Knapp (1972, p. 28) states that a change in behavior precedes a change in attitudes. "This method suggests that direct involvement in action projects results in changes of attitudes. For example, if students become involved in cleaning up the refuse along a river, their attitudes may change from indifference toward the problem to a concern for preserving the scenic beauty along the river."

Knoll (1972) completed a study of the effect of an undergraduate exploratory field experience course on the attitudes held by pre-student teachers. The study included 162 elementary and 286 secondary pre-student teachers. The instruments used were the Minnesota Teacher Attitude Inventory (MTAI), the Exploratory Field Experience Activities Form (developed by Knoll), Attitudes Toward Teaching as a Career, and a Scale for Determining Teachers' beliefs. Only the MTAI was used for both the pre and posttest. Signifiance was found in three of the five dimension areas of the MTAI (Moral Status, Principles of Child Development, and Personal Reactions of Teachers) and the total means. This would indicate that the course did have some effect on attitudes but because of the lack of a control group and the fact that the other three instruments were used only as independent variables in the posttest the findings are of limited value.

Altman and Costek (1971) compared the effectiveness of three types of practice teaching: student teaching, interning and micro-team teaching. Up to this time studies considered teacher behavior within a form of practice teaching rather than between different forms. Instruments were used to measure the extent of change in open-mindedness and several dimensions of self concept of the practice teacher. Using the assumption that having a more open mind to examine differing ideas a teacher will be more successful. The results of the study showed the micro-team teachers and the interns to be more open-minded as a result of their experience than were the student teachers. These findings must be considered in light of the fact that the interns were selected into the program on the basis of academic achievement and personal interview. Randomization would improve the validity of the results greatly.

B. A review of the research currently in progress.

There are a few research projects which are currently in progress which are directly related to this topic. Douglass and Horner (McCracken, 1976, p. 213) are conducting an evaluation of the effect of career information upon aspirations, knowledges and attitudes toward the world of work.

Another study relating to career education is being conducted by Brous (AIM/ARM, 1975, pp. 371-372). The purpose of the study is to develop procedures for changing teacher attitudes and updating their information on career education. The procedures identified will be synthesized to develop workable inservice training programs.

Sikorski (1975) is studying attitudes related to vocational education. The objectives of the study include:

1. To provide information about the structure of current attitudes of minority and disadvantaged students toward vocational education.

2. To provide information about the relationship of these attitudes to more fundamental beliefs of students and their parents about education, work, and society in general.

3. To provide information about what segments of the current population of disadvantaged and minority students might be reached and positively affected by selected information campaigns (AIM/ARM, 1975, p. 152).

A study which integrates the teaching of attitudes with skill development is being conducted by Elwell (AIM/ARM, 1975, p. 189) entitled "At Last: Affective Training for Learning Affective Skills for Today." The study is designed to develop a replicable affective curriculum to integrate with a skill development curriculum in vocational education programs. Another purpose of the study is to create administration/teacher awareness of the value of including affective learning as a part of the skill development curriculum.

A similar study is being conducted by Orr (AIM/ARM, 1975, pp. 391-392) to determine if the use of attitude change packages in colleges of low income minority community college students increase grade point averages and retention rates.

As indicated by the aforementioned studies, further research is being conducted in the area of attitude development. Many studies are directly related to the attitude of teachers toward career education, minority and disadvantaged students and determination of the effects we can have on attitudes.

C. Suggested methods of applying or implementing the results of the research

To date there have been limited results identified by research in the area of attitude development as a part of teacher education programs. Confluent education stresses an approach to teaching which synthesizes the affective and the cognitive domains (Brown, 1971, p. 4). All teaching involves an integration of the cognitive and affective components without a distinction between them.

This suggests that as an integrated part of our teacher education programs consideration must be given to the affective domain as well as the cognitive. Preservice and inservice courses can be planned to develop, alter or reinforce certain attitudes towards students, professional responsibilities and the classroom environment. Direct involvement in action projects is important. Examples for teacher education include early field experience and classroom simulation exercises.

In implementing the results of the attitudinal research, it is important to include a testing program to determine the effectiveness because of the inconclusive nature of past research. This will add much needed data to this area of research. Researchers have found that few investigators observed the behavior of the teacher as a measure of attitude. Instead teacher attitudes were measured by verbal reports of their feelings or opinions (Stern and Keislar, 1975, p. 8). The ultimate finding is the change in student outcomes as a result of changed teacher attitudes.

D. Suggestions of needed research.

Much of the attitude research is using the Minnesota Teacher Attitude Inventory (MTAI) to identify changes in attitudes as a result of a treatment. Brody (1970, p. 67) found that student teachers who score high on the MTAI tend to be more effective with non-college bound students who can be considered affectively oriented. Those student teachers with low MTAI scores tended to be more effective with the college-bound students, those who are cognitively oriented. This may account for some of the inconsistent results in using the MTAI to predict teacher effectiveness. This suggests the importance of considering the type of pupil with whom a particular kind of teacher is most effective but it also suggests that our results may be misleading if we are not aware of all the causes. In dealing with attitudes this is even a greater problem than in other areas of research.

Stern and Keislar (1971) suggest we raise the question of whether teacher attitudes make a difference. They found few experimentally rigorous tests of the hypothesis that teacher attitudes have a direct bearing on student attitudes or behavior. From their point of view the problem is that teachers are human and react differentially with different types of students. There are too many differentiating characteristics that affect teacher attitudes and can not be changed.

On the other hand Brown suggests "...There is much work that needs to be done. We need more sophisticated theory that is at the same time functional and that can be translated operationally, and we need a spate of empirical studies to test when, where, how and with whom confluent education has effect (Brown, 1971, pp. 254-255)."

Research in the area of attitudes must consider the long term effects of a treatment; many attitudes are slow to change, others are unstable. Long term studies will more accurately reflect the true effects of the treatment. Efforts should be made by teacher education programs to identify additional experiences or informational inputs which will produce positive attitude responses in students. They must also identify methods which high school teachers can use to develop positive attitudes in their students. Brown (1971, p. 17) suggests that the number of individual and social ills (alienation, erosion of the family as a meaningful societal unit, violence, drugs, etc.) support the incorporation of teaching attitudes as a part of educational programs as having potential for improving our society. Schools have the greatest potential for producing the needed change in our society and our teacher education programs should have the greatest effect on the schools.

The design and methodology of the research is most important. The author reviewed many studies purported to have identified new approaches to teaching attitudes, but because of the weak designs or poor methodology, the findings were of limited value. Much time and effort is lost because of poor planning when developing a research design. We need strong research studies on which we can build if we are to identify techniques of attitude development which we can use in our teacher education programs.

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Summary of Comments by Panel of Reactors

Kirby Barrick, Ohio Agricultural Education Service

The improvement of student learning in classroom and laboratory situations is a broad and cumbersome topic to approach. I will discuss four basic assumptions which I feel help to influence the improvement of education each time a teacher steps into a classroom or laboratory situation.

When we grant an individual the right to become a teacher of vocational agriculture in Ohio by means of a teaching certificate we assume that a curriculum based occupational analysis has been designed for the community. Currently we are involved in redeveloping curricula in vo-ag and each teacher is involved in preparing a course of study for each class. The first step in improving student learning is to develop a course of study for each class based on an occupational analysis. Such a course of study will enumerate the skills and tasks to be developed by each student and will include the management strategies to be used by the teacher in assisting students to obtain these facts and skills.

A second assumption which is made when a teacher enters a department is that the facilities and equipment are adequate to teach required skills. Those of us in supervision know that that assumption is not always true. The rapid development of non-production agriculture and changes in production agriculture, a shortage of school funds, teacher apathy and incompetence, student misuse, etc. are responsible for inadequate facilities and equipment. In addition proper facilities and equipment can only be identified after the course of study is prepared.

A third assumption which is made is that teachers possess all competencies and skills needed to succeed in a classroom and laboratory. The affective domain, which Dr. Howell has discussed, remains illusive. Teacher attitudes can be grouped, I feel, into two catagories.

The first group contains those attitudes which pertain to the teaching of teachers. Prospective teachers must be helped to develop the proper attitude toward students. Teachers no longer face classes of similar students with similar backgrounds. Prospective teachers must be prepared to meet these challenges and see to it that social norms do not interfer with the educational process. We must instill in teachers attitudes toward proper professional responsibility. We must help teachers develop proper attitudes toward the classroom-laboratory situation.

The second category of teacher attitudes involves teachers equipping students with proper attitudes toward work and education. Employers expect students to have the skills and abilities needed for the job. But students must also be willing to work. Teachers must help their students develop a proper work ethic.

The final assumption made when a teacher goes on the job is that students are willing and eager to learn. Needless to say, such a utopia is rare in public education. It is our responsibility to see that teachers are able to motivate students to learn or at least to see that uninterested students do not interfer with the progress of others in class.

All this leaves us with some pertinent questions. What competencies including the affective domain are needed by teachers? If teachers personally possess certain competencies, does this insure they can teach these competencies to others? How should teachers deal with students who do not wish to learn? How should teachers cope with inadequate facilities and equipment? These are some of the questions which we must work together to answer for the improvement of student learning in the classroom and laboratory.

Benton Bristol, Illinois State University

I did find the paper very stimulating and rewarding to read. I think an additional reason for the few articles relating to teacher education and specifically in the area of attitudes in the AATEA Journal is the fact that we have other fine outlets for our research reports. Some of the publications used are: The Agricultural Education magazine, Summary of Studies in Agricultural Education series, and the NACTA Journal.

I thought the paper described well the general lack of evaluation materials in the affective domain area until 1964. But in the ten years from 1965 to 1975 quite a few more studies have been made, especially in the area of psychology. Some of these instruments could be used in agricultural education. Unfortunately some studies have titles which are not descriptive of the attitudinal evaluation which occurred.

There is a danger in defining attitude development in relation to teacher education too narrowly. We need to include such things as behavior change, interest and motivation as well.

The matter of social science was given a fair hearing in this paper. In fact it may have been over-emphasized to the exclusion of other studies.

I would be interested in learning how the values test in the Gardner and associates study was validated. I have this question of every attitude scale I see. The validation generally leaves a lot to be desired.

A researcher conducting attitudinal research should do the following: pre-test to determine existant attitudes, identify those aspects in the environment which are capable of changing student attitudes, and measure through the use of a post-test to determine attitudinal changes.

Clark Hanson, South Dakota State University

The affective domain although it is the most difficult area in which we teach is extremely important. Psychomotor and cognitive domain teaching may be long forgotten but affective domain teaching will remain. The review of research yielded several projects but the results did not yield conclusive evidence to determine the degree of success in developing attitudes in teacher preparation education. In order to review current research Dr. Howell had to leave teacher education and go into secondary education.

Most current affective domain teaching research appeared to be going on with students and in this all important area of development of work attitude. The suggestions for applying the research included the integration of the affective domain and the cognitive domain. I can buy that because in agricultural education it is so difficult to separate subject matter and the methods of teaching anyway. As in the previous report, we couldn't define teaching as strictly a science or an art. So we go at it from both angles. I think the same is true in affective domain and cognitive domain in teaching.

Dr. Howell called for determining the long term results. Because affective domain teaching will have the longest duration of the three types of learning that goes on, the follow up studies would be very sound. Here are some questions that are of concern to me. Do we have sufficient numbers to warrant conducting the in depth studies that Dr. Howell and Vice President Krebs are calling for? Maybe such research should be conducted in conjunction with parallel studies by our colleagues in general education. I didn't say identical but parallel studies. Another area that I am concerned about is what happens to the advising process? I personally feel that a high degree of the affective domain teaching that we do as teacher educators takes place on the one to one relationship across the desk or elsewhere that we have with student teachers.

Summary of Discussion Following the Panel Reaction

There was a strong generalization that change in behavior precedes a modification of attitude. The literature doesn't seem to clarify this issue. However, research seems to indicate that involvement rather than passive listening greatly enhances attitudinal modification.

Does research support that affective learning is retained while psychomotor and cognitive learning may soon be forgotten? Attitudes seem to be long, prevailing acquisitions while psychomotor and cognitive skills may be forgotten more rapidly. If we believe in adult education, we have to expect some attitudinal changes. Generally the only measure we have of the change in attitude is by performance.

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Identification of the Occupational Competencies Needed in the Area of Agri-Chemicals

A Study by David L. Howell, William Hamilton, and Dan Webb

Presented by David L. Howell
Purdue University

Introduction

Throughout the United States, there is a growing need for employees to fill employment positions in agriculturally related businesses (Amberson, Bishop, and Ekegren, 1972, p. 5). Because of this growing demand across the United States, it can be assumed that the employment picture is much the same in Indiana. If programs are to be developed to train high school youth to fill these occupations then the competencies must be identified or up dated which are required for these occupations.

This research project in agri-chemicals was part of a national strategy for developing competency-based instruction for all career clusters in agri-chemical, natural resources and environmental protection. A national committee appointed by the U.S. Office of Education of which the project director was a member has begun the task of developing catalogs of competencies by occupational clusters. This system of assessment and accountability offers the flexibility essential for today's educational problems yet assures positive occupational placement upon program completion. Using this approach, the teacher/manager can diagnose individual training problems and prescribe alternative learning strategies. The single most important decision concerning the quality of any instructional program is based on the performance of the learner. This system of competency-based education provides a valid foundation for programs leading to employment in agri-chemicals occupation.

Purpose and Objectives

A project was proposed and subsequently funded by the State of Indiana, State Department of Public Instruction through Agricultural Education at Purdue University. The major purpose of this study was to identify and validate competencies for occupations in the agri-chemical sales and service industry. The primary objectives of the project were:

1. Identify the agricultural occupations at the mid-management, technical and skilled levels for the area of agri-chemicals in the State of Indiana which requires an agricultural background for entry.

2. Develop a comprehensive catalog of the competencies pertinent to the agri-chemical occupations identified. Revise the competency list through field test.

3. Determine the priority of the competencies using a random sample of employers-employees from the population of agri-chemical dealers in Indiana, Wisconsin, Ohio, South Dakota and Iowa.

4. Develop a catalog of performance objectives from the competencies identified as having high priority by the agri-chemical employers. This list can then be used by educational programs to develop curriculum.

Methodology

The attainment of the objectives necessitated the selection of occupations to be surveyed, the development of a survey instrument for conducting of a task survey for each occupation, the analysis of data, and the development of job descriptions and competency listings.

Identification of Occupations

A review of the literature and the recommendations of the consultant committee were used to identify the agri-chemical occupations examined in this study. The consulting committee consisted of vocational agriculture teachers, representatives of agri-chemical industry, and the State Department of Public Instruction project monitor.

The agri-chemical occupations identified as skilled, technical and mid-management included: manager, sales clerk, service mechanic, field technician, trouble shooter, warehouse man, and applicator.

After review of the literature and with the assistance of the consulting committee, a survey instrument was developed for the identification of the competencies which were pertinent to specific occupations in agri-chemicals. A pilot test was conducted to assist in the development of the survey instrument and revisions are made as a result of interviews of employers and employees who were at the skilled, technical and mid-management levels in agri-chemical occupations.

Indiana Sample

A random sample of counties were identified in the State of Indiana for use in this study. Within the counties selected, vocational agriculture instructors were identified and contacted. They were asked to provide the research project staff with a listing of agri-chemical firms in their county. It was from this list that four businesses within each county were identified and called upon for assistance in completing the questionnaire. Each business was asked to complete the questionnaire of one of the agri-chemical occupations through a personal interview by a project staff member with an employee who has the particular occupation. Twenty counties were visited in the State of Indiana (See Table 1). In all counties, there were four responses to the questionnaire collected except for the following: in Dekalb County, the fourth dealer could not be located with three attempts; in Orange and Gibson Counties, only three dealers could be identified in the county. No results are reported for Jennings County since the data collected was lost.

TABLE 1. ACTUAL LOCATION FOR THE INDIANA SOURCE OF PERSONAL INTERVIEWS NEEDED FOR DATA

Counties Interviewed	Responses/County	Non-Responses
Elkhart	4[a]	0
Dekalb	3**	1
Fulton	4	0
White	4	0
Adams	4	0
Grant	4	0
Clinton	4	0
Fountain	4	0
Hamilton	4	0
Henry	4	0
Putnam	4	0
Johnson	4	0
Monroe	4	0
Ripley	4	0
Jennings	0***	0
Orange	3*	0
Clark	4	0
Dubois	4	0
Gibson	3*	0
Posey	4	0

[a]Four dealers were randomly selected for interviews per county.
*Four dealers could not be located within the county.
**Fourth dealer was visited three times without success in locating any of the employees
***Data collected from Jennings County was inadvertently misplaced.

Out-of-State Sample

The States of Ohio, Wisconsin, South Dakota and Iowa were selected at random from the Central Region of the United States to be included in this study. The sample of businesses was prepared from a list of the agri-chemical dealers provided by the National Agricultural Chemical Association and the Ohio Grain Feed and Fertilizer Association Directory. There were twenty agri-chemical dealers from each state identified at random who received copies of the questionnaire. A total of five mailings were made to the non-respondents. Table 2 indicates the response rate of each state. Attempts were made to collect information from the non-respondents by telephone but because of the length of the questionnaire, it was found that the cost was prohibitive.

TABLE 2. STATES INCLUDED IN MAILINGS OF THE QUESTIONNAIRE AND THEIR RESPONSE RATE.

State*	Responses/State	Non-Responses	%
Ohio	10**	10	50
Wisconsin	17	3	85
South Dakota	6	14	30
Iowa	5	15	25

*States were chosen by random selection of the Mid-Western area which agricultural aspects were similar.
**Five mailings were sent out to 20 Agri-Chemical dealers per state.

Response Rate for Each Occupation

During the course of the project, it was learned that some of the job titles which had been identified as occupations in Agri-Chemicals were not found in all businesses. This resulted in a limited amount of data available for occupations such as service mechanic and warehouse man (See Table 3). With the Indiana surveys, if the interviewer was unable to locate an individual with the job title selected for that particular business, at the next business he would interview both the assigned individual and the individual with the job title that was missed if available. With the questionnaires which were sent out-of-state, such a procedure was not possible and this may account for the lower rate of return.

TABLE 3. NUMBER OF SURVEY INSTRUMENTS COMPLETED BY PERSONAL INTERVIEWS IN INDIANA AND BY MAIL OUT-OF-STATE TO DETERMINE OCCUPATIONAL COMPETENCIES NEEDED IN THE AREA OF AGRI-CHEMICALS

Occupations	Indiana	Out-of-State
Manager	13	8
Sales Clerk	12	4
Service Mechanic	5	4
Field Technician	11	6
Trouble Shooter	9	5
Warehouse Man	8	3
Applicator	15	8

Questionnaire

The questionnaire developed for use in the Agri-Chemical project consisted of competency statements identified under seven main areas. The areas included safety; soil science; merchandising; calibration, pest control; equipment purchasing, maintenance and repair, and management. The employees were to rate each competency statement under each area as essential, important, of some importance, not important, or does not apply in reference to their particular occupation.

Statistical Analysis

Using the assigned values, 4 = essential, 3 = important, 2 = of some importance, 1 = not important and 0 = does not apply; a weighted mean was determined for each of the competencies. The results are reported separately for Indiana and the out-of-state data. The purpose for doing this, is to prevent the large amount of data which was collected in Indiana from obscuring the data collected in states other than Indiana and allowing a comparison between sources of data to be made.

Findings

The findings of the project are summarized in Table 4. Each of the seven duty areas relative to agri-chemical occupations are given a mean rating score based on the average of the ratings for the competencies within the area.

TABLE 4. MEAN RATING OF THE DUTY AREAS RELATING TO OCCUPATIONS IN AGRI-CHEMICALS

Duty Areas	Mean Ratings						
	Manager	Sales Clerk	Service Mechanic	Field Technician	Trouble Shooter	Warehouse Man	Applicator
Safety	3.33[a]	2.87	3.13	3.04	3.14	3.28	3.00
	3.54[b]	1.75	1.58	2.26	2.68	2.75	3.17
Soil Science	3.09	2.55	2.63	3.02	2.79	2.40	2.41
	3.07	2.79	.82	3.10	2.29	1.00	2.63
Merchandising	3.09	3.09	2.49	2.60	2.39	2.32	2.08
	3.00	3.25	.59	2.73	1.96	1.88	2.20
Calibration	3.10	2.19	3.12	2.97	2.75	2.75	2.92
	2.95	3.03	2.78	3.35	2.71	1.59	3.61
Pest Control	3.31	2.65	2.63	2.80	2.92	2.25	2.24
	3.21	2.64	1.71	3.36	3.14	1.81	2.84
Equipment Purchasing	2.37	1.92	3.00	2.59	2.28	2.45	2.95
Maintenance & Repair	2.95	1.89	3.68	2.86	2.91	1.24	2.93
Management	3.26	2.88	2.79	2.80	2.02	1.74	2.03
	3.43	2.93	1.64	2.09	2.06	1.86	2.25

a = Indiana, b = Out-of-State Responses

For most occupations, a mean score rating of 2.3 or less would indicate a low priority for inclusion of the competency as a part of the curriculum. This cut-off point was used by McCracken (1975, p. 5) in a similar study to identify basic skills for a curriculum in agri-business. Care must be used in considering the data collected for the out-of-state sources where the number of responses was small. Examples of this are found in the occupations of sales clerk, service mechanic and warehouse man where four or less questionnaires were returned. From the data reported for Indiana, the lowest response was for the occupation of service mechanic, the other occupations ranged from 8 to 15 responses.

Competencies Required for Manager

The results of the data indicate that the duty areas to be included in the curriculum for training managers should include: safety; soil science; merchandising; calibration; pest control; equipment purchasing; maintenance and repair; and management. This would indicate that the manager must have a background in all areas of the agri-chemical business.

Competencies Required for Sales Clerk

The results of the data indicate that the duty areas to be included in the curriculum for training sales clerks should include: safety; soil science; merchandising; pest control and management. The duty areas which were given low priority ratings included: calibration and equipment purchasing, maintenance and repair. This would indicate that the occupation of sales clerk includes little field work.

Competencies Required for Service Mechanic

Because of the small sample size, it is difficult to determine which duty areas should be included in the curriculum for the service mechanic. In five of the areas, there is great variation in the results obtained between the responses from Indiana and those responses from out-of-state. The two areas that do show a high correlation and also are shown to include important competencies are the areas of calibration and equipment purchasing, maintenance and repair. Through interviews with agri-chemical dealers, it was determined that most of the mechanical work was done by the employee of the local operation who primary function is in one of the other occupational titles but who still possesses the greatest mechanical competence. Otherwise the mechanical repair work was done by the agency from whom the equipment was purchased.

Competencies Required for Field Technician

All seven duty areas were identified as being of high enough importance to be included in the curriculum for field technician. A field technician must have a broad agri-chemical background much the same as the manager. In most businesses, it was found that he was considered to be an assistant to the manager.

Competencies Required for Trouble Shooting

The results of the data indicate that the duty areas to be included in the curriculum for training trouble shooters should include: safety; soil science, calibration, pest control; and equipment purchasing, maintenance and repair. The duty areas receiving low priority included: management and merchandising. Through interviews with employees in agri-chemicals, it was learned that the trouble shooter is concerned with identifying farm chemicals to control agronomic problems and/or determine why agronomic problems have developed as a result of the use of farm chemicals.

Competencies Required for Warehousemen

Because there were only three returns of the out-of-state questionnaire relating to the occupation of agri-chemical warehouseman, they will not be considered in examining the results. The results of the data collected in Indiana indicate that the curriculum for training warehousemen should include all duty areas except for management which received a low priority rating. It was indicated through the interviews with agri-chemical dealers that few businesses are large enough to employ an individual to work in this area alone but that they are given additional responsibilities.

Competencies Required for Applicator

The results of the data indicate that the curriculum for training an applicator should include the following duty areas: safety; soil science; calibration; pest control; equipment purchasing, maintenance and repair. Those duty areas receiving low priority included merchandising and management. This occupation was found by the interviewers to be the entry occupation for most employees of agri-chemical firms.

Implications

During the course of this project it was learned that three types of agri-chemical businesses exist: (1) both the sale of farm chemicals and their application, (2) sale of farm chemicals but no application service, and (3) application service of farm chemicals only. Most of the businesses included in this study were found to provide both the sale of the farm chemicals and their application. The average size of the businesses had five employees. It was found that with businesses of this size employees performed skills in all job categories. In most cases it was found that they entered the business as an applicator and gradually increased their skills in other areas. This suggests that high school training programs should consider emphasizing the skills required of an applicator for those students interested in entering occupations in agri-chemical businesses. It was also found that since most businesses were small, specialization must be limited. Because of this, it was difficult to identify employees who had job descriptions limited to one of the seven categories used in this study. This suggests that in a training program in agri-chemicals the student must be prepared to work in all categories of the agri-chemical business and the training must also include several categories.

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Summary of Comments by the Panel of Reactors

Paul Hemp, University of Illinois

Here we have an example of a research approach that is basic to vocational program planning. We must know what employers want, what the employees must be able to do, and what they must know in order to be successful on the job.

A question I have is, how specific or narrow should the curriculum be at the high school level? In Illinois, we have no programs in ag-chemicals at the high school level. We have two at the community college level that deals with ag-chemicals. The question I am raising is, should this be a program? I am assuming the data that our researchers have collected will be combined with data from other states and the curriculum will proceed from that point. Perhaps the program you will come out with would not be an ag-chemical program but an ag-supply and services or a broad area.

Dave pointed out the ratings for some competencies differed substantially for the Indiana respondents and the out of state respondents. This leads one to believe that the national competencies may not be a valid basis for curriculum development in all of our studies. It appears we still need to collect data in our states to do local program planning. In the days of Smith Hughes vocational agriculture the approach was to study the local community and develop a course of study for it. It would appear that in ag. chemicals as well as in many of the other off farm occupations areas the state should be the basis for data collection. State manpower data would be most useful.

In thinking about preparing ag. chemical employees at the high school level I wonder what problems teachers face in meeting the hazardous occupations regulations. It would seem at least some of the job skills would involve work activities that are inappropriate for students less than 18 years of age. That's another reason why training for some of these occupations might be more appropriate at the postsecondary level.

Our researchers asked the employers and employees from Indiana and some other states to rate the competencies of prospective employees. It would be interesting if in further research we could find out what the ratings of consumers and environmental enthusiasts were to see if their ratings would agree with what the employers and employees tell us. I think sometimes in vocational education, we are critized for listening too much to employers, to business people regarding what I should be teaching and maybe not paying much attention to other groups in society. Maybe we have an obligation to find out what other groups believe we should be teaching to prospective employees.

The last point I want to make is the researchers decided not to follow up nonrespondents with a telephone call interview. They mentioned the cost factor which is always important in working with a limited research project. But I want to mention a study made in our department last winter where all the data were collected through telephone interviews. The researchers called over 1700 telephone numbers in Illinois to study job survival skills. They collected 589 interviews that lasted 10 to 12 minutes each. They used the watts line at the university at night during the dinner hour. I have no information on the cost. Telephone interviews represent a feasible way of collecting data and it may not be as costly as you think it might be at first glance.

David Williams, Iowa State University

I would like to join Paul in commending the Purdue staff for conducting this competency study. It has been getting much more difficult to obtain information by mail so I was pleased that in Indiana they used personal interviews. I know that is very expensive but to see the type of response they got back from other states we can see it was probably good that they conducted interviews in Indiana.

We may want to consider in future competency studies more elaborate field testing to reduce the competency list to those items that seem important. The length of the instrument should be decreased as we go to a larger population or larger sample.

Our research should have a thorough pilot testing then be followed up with more comprehensive research. Dave mentioned they found things when they got in the field that were not anticipated. I think sometimes we might be better off to spend larger percentage of our budget on field testing before we go to a larger population to collect our data.

I think competency studies provide a very good base for competency based curriculum. We need to give consideration to the next move. Are we going to combine information from various states into some type of curriculum? How do we move from the findings of a study like this to curriculum? Are there more research steps involved?

Are we doing research or are we working on developmental projects? I think we interchange those terms. In this study we see some discrepancies for competency ratings between out of state and Indiana respondents. Can we base curriculum for the whole nation on these competency studies? Will the data be of use for curriculum development after we get them?

Summary of Audience Discussion

We need to be concerned with what happens to the curriculum materials after they are compiled. Excellent materials have been developed by AAVIM, John Deere, etc. but it seems to me instructional strategies must be considered if teachers are to make effective use of these aids. This is an area where additional research is needed.

Another method of obtaining data which could be valuable in competency studies especially might be the case study. This technique has been used very successfully in fields such as industrial psychology. While you are dealing with very small N's the study can be more indepth.

How valid will this and other national competency studies be in the development of state curriculum? The study should be used as one more source of information which should be combined with state studies, advisory committee input, etc. to plan local programs.

What limitations are attached to other states using the data in the ag. chemicals competency study? As you noted there were discrepancies between out of state and in state responses. We have to ask - What makes these jobs so different as we cross state lines. Dr. Howell stated he has more confidence in the Indiana responses since they were obtained by personal interviews.

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A Cost-Effectiveness Analysis of Selected Vocational Education Programs in Area Vocational Centers and Local Comprehensive High Schools

Edgar P. Yoder
The Ohio State University

Introduction

The need to assess the relative benefits and costs of vocational education programs, in fact all educational programs, has been demanded by school officials, legislators, and taxpayers. The Vocational Education Act of 1963 and the 1968 Amendments explicitly stated that vocational education programs supported by federal funds shall be evaluated. Some have suggested this demand for evaluating educational programs, in addition to the increasing complexity of educational operations and the scarcity of resources available for educational programs, calls for the development and/or application of new planning, analyzing, and evaluating procedures. In recent years increasing attention has been given to the application of new procedures to the development and evaluation of the educational process and product. Increasingly, econometric techniques, such as cost-benefit and cost-effectiveness analysis, have been applied to the educational setting.

Ohio has offered vocational agriculture education in two types of public secondary schools: (1) local high schools and (2) area vocational centers. In recent years Ohio's taxpayers and educators have raised rather poignant questions regarding the costs and benefits of local high school and area vocational center programs. Questions regarding the effectiveness and efficiency of vocational programs in local high schools and area vocational centers remain unanswered.

Purpose and Objectives

The purpose of this study was to assess the cost-effectiveness of vocational agri-business, horticulture, and production agriculture/farm management programs offered in local high schools and area vocational centers.

The objectives of the study were to:

1. Identify the non-monetary benefits accruing to the graduates and examine factors associated with the non-monetary benefits.

2. Identify monetary benefits accruing to the graduates and examine factors associated with the monetary benefits.

3. Calculate the average and marginal costs of operating the selected vocational agriculture programs in local high schools and area vocational centers.

4. Assess the cost-effectiveness of the selected vocational agriculture programs in achieving program objectives.

5. Assess the efficiency of the programs by calculation of three cost-benefit criterion measures, namely, the present value of net benefits, the internal rate of return, and the benefit-cost ratio.

Methodology

Population

The population for this study was a randomly selected segment of vocational agriculture programs offered in Ohio local high schools and area vocational centers. A combination of stratified random sampling and multi-stage sampling techniques were utilized to identify the nine schools and 224 graduates for inclusion in the sample. Graduates in the sample had graduated in the 1969-1970, 1971-1972, or 1973-1974 school years. Therefore, the graduates represented one-, three-, and five-year program graduates.

Data Source and Collection

Information regarding program graduates and the vocational agriculture programs was collected by personal review or mail questionnaire from the following sources:

1. The graduates in the sample;

2. Pupil personnel files maintained in local schools;

3. Financial records maintained by local boards of education;

4. The PRIDE cost analysis reports compiled by the Ohio Department of Education.

A follow-up questionnaire to be mailed to graduates was developed and field tested. The questionnaire and a cover letter with an incentive was mailed to each graduate in the sample. A mail follow-up of non-respondents was conducted two weeks and four weeks after the initial mailing. A usable return rate of 83.1 percent was obtained. Early respondents, late respondents, and non-respondents were compared on selected background information. The findings provided evidence which suggested that the segment of the sample not responding was similar to the respondents.

Inferential statistics were utilized to test the hypotheses formulated regarding monetary and non-monetary indices. Multiple regression analysis techniques were utilized to examine relationships of selected independent variables with the dependent variables.

The indices of monetary and non-monetary benefits (measurements of performance in labor market) identified as pertinent to the objectives of the study included: (1) time needed to secure full-time employment after graduation from high school; (2) degree of job placement relatedness to the vocational agriculture program completed; (3) degree to which graduates had been prepared for their jobs by completion of the vocational agriculture program; (4) degree to which graduates were satisfied with various aspects of their jobs; (5) earnings received by the graduates; (6) percent of time the graduates had been unemployed since graduation; (7) amount of geographical mobility experienced by the graduates; (8) the degree of job stability; (9) degree of job level progression experienced by graduates; (10) amount of earnings progression experienced by graduates; and (11) the degree of community involvement.

Selected Findings

The analysis of data provided results regarding: (1) the "comparability" of the graduates from vocational agriculture programs in local high schools and area vocational centers; (2) non-monetary benefits accruing to the graduates; (3) monetary benefits accruing to the graduates; (4) costs of the programs, and (5) the investment analysis.

Comparability of the Graduates

In order to enhance the internal validity of the study, information was obtained to examine individual student characteristics. Analysis of the information revealed that graduates from the local high school and area vocational center agriculture programs in this study were "comparable" (no significant difference at the .05 alpha level) in terms of: (1) high school freshman mathematics or science grades; (2) freshman year GPA: (3) IQ stanine values; (4) California Test of Mental Maturity scores; (5) parent's educational level; and (6) parent's occupational status (NORC Scale). Local high school graduates were found to have significantly higher ($p < .05$) freshman year English grades than did area vocational center graduates.

Selected Non-Monetary Benefits

Information was collected regarding indices of non-monetary benefits for the first full-time job and the current or last full-time job. Reported in this section are results concerning selected non-monetary benefits.

Time to Initial Full-Time Employment

Information was obtained regarding the length of time it took graduates to secure their first full-time job after graduation from high school. The data revealed it took local high school graduates an average of 1.79 weeks after graduation from high school to secure employment as compared to 2.54 weeks for area vocational center graduates. There was no significant difference ($p > .05$) in the average amount of time it took graduates from the two types of schools to secure the initial full-time employment.

The multiple regression analysis revealed a significant degree of association between the time needed to obtain full-time employment and: (1) kind of vocational agriculture program completed; (2) geographical location; (3) school setting; (4) socio-economic background; (5) year of graduation; and (6) labor market structure.

Degree of Current Job Placement Relatedness to the Vocational Agriculture Program Completed

Information was obtained regarding the extent to which graduates perceived their last or current full-time jobs were related to the vocational agriculture programs completed. It was found that 37.3 percent of the local high school graduates and 40.7 percent of the area vocational center graduates perceived their current jobs being either highly related or identical to the type of work prepared for. Interestingly, approximately one-fourth (24.0 percent) of the local high school graduates and approximately one-third (35.2 percent) of the area vocational center graduates perceived their current jobs as being completely unrelated to the vocational agriculture programs completed. There was no statistically significant difference ($p > .05$) between graduates from the two schools regarding their perceptions of how related their current jobs were to the vocational agriculture programs completed.

The multiple regression analysis revealed a significant degree of association between job placement relatedness and the following factors: (1) kind of vocational agriculture program completed; (2) geographical location; (3) school setting; (4) geographical mobility; and (5) labor market structure.

Degree of Preparation for the Current Job

Graduates were asked, "To what extent did completion of the high school vocational agriculture program prepare you for your current job?" The data disclosed that 61.7 percent of the local high school graduates and 60 percent of the area vocational center graduates believed they had been exceptionally well or well prepared for their current jobs. Approximately one-sixth of the graduates (16.4 percent of local high school graduates and 16.2 percent of area vocational center graduates) reported they had been very poorly prepared for their current jobs by completion of their vocational agriculture programs. Overall, there was no statistically significant difference ($p > .05$) between the two groups regarding the extent graduates believed they were prepared for their current job by completion of a vocational agriculture program.

The multiple regression analysis indicated a significant degree of association between degree of preparation for the current job and the following factors: (1) kind of vocational agriculture program completed; (2) years of vocational agriculture completed; (3) degree of job placement relatedness; and (4) labor market structure.

Degree of Satisfaction with the Current Job

Information was obtained regarding the extent to which graduates were satisfied with the following components of their current job: (1) pay received; (2) chance for advancement; (3) type of work performed; (4) the people worked with; and (5) the supervision provided. The data revealed that for each of the components of job satisfaction, graduates from the two types of schools reported a similar degree of job satisfaction.

Multiple regression techniques disclosed a significant degree of association between overall current job satisfaction and the following factors: (1) socio-economic background; (2) year of graduation; (3) military service; and (4) degree of job placement relatedness.

Degree of Unemployment Since Graduation

The degree of unemployment since graduation from high school was defined as the percentage of time since graduation during which time the person was unemployed and was seeking full-time employment. It was revealed that local high school graduates had been unemployed 3.64 percent of the time as compared to 4.88 percent for area vocational center graduates. This did not represent a statistically significant difference ($p > .05$).

The multiple regression analysis revealed a significant degree of assocation between percentage of time unemployed since graduation and the following factors: (1) type of school attended; (2) kind of vocational agriculture program completed; (3) geographical location; (4) school setting; (5) socio-economic background; and (6) years of vocational agriculture completed.

Selected Monetary Benefits

Information was obtained from the graduates regarding indices of monetary benefits accruing to graduates of local high school vocational agriculture programs and similar programs in area vocational centers. Reported in this section are results concerning selected monetary benefits.

Current Gross Monthly Income

Current gross monthly income represented current earnings before any deductions were taken or taxes withheld. Local high school graduates reported current gross monthly earnings of $774.62 as compared to $654.36 for their counterparts from area vocational centers. This represented a difference of approximately $120.00 per month; however, this was not a statistically significant difference ($p > .05$). Although not a statistically significant difference, the author would suggest this represents a substantial difference to the graduates of the programs.

The multiple regression analysis revealed a significant degree of association between the current gross monthly earnings and the year of graduation and the labor market structure.

Selected Findings Regarding Program Costs

Program operational characteristics and cost data were obtained from local board of education records. Fourteen major program expenditure categories (Chart 1) were identified and represented both direct and indirect costs. The total annual program costs for local high school vocational agriculture programs averaged $22,311.00 as compared to $26,823.00 for area vocational center programs. Area center vocational agriculture programs cost approximately $4,512.00 per year more than similar programs in local high schools.

Total annual costs per pupil were computed using the total program costs and the number of pupils enrolled in the programs. Annual program costs per pupil for local high school programs averaged $921.20 as compared to $1,336.33 for area vocational center programs. It cost approximately $415.00 more per year to educate each student at the area vocational center than it cost to educate each student at the local high school. This represented a statistically significant difference ($p > .05$).

Marginal costs were computed to identify the cost of adding a section of an alternative vocational agriculture education program in local high schools and area vocational centers. The units of output were determined by the minimum program enrollment required for reimbursement by the State Department of Education. The marginal costs of the alternative vocational agriculture programs were based on total current costs. Marginal costs of vocational agriculture programs in area vocational centers averaged $1,084.19 in comparison to average marginal costs of $566.42 for local high schools. The marginal costs of vocational agriculture education programs in area vocational centers were significantly higher than marginal costs of similar programs in local high schools.

Findings Regarding Cost-Benefit Analysis

The analysis of benefits and costs through benefit-cost analysis has been one approach utilized to judge program utility or success. In the analysis of benefits and costs in this study, several assumptions and decisions were made which influenced the cost-utility analysis.

The analysis of benefits in this study focused primarily on gross earnings of program graduates. The study involved a relatively short period of time, and benefits had to be estimated by extrapolation procedures since a longer time horizon was desired. In this study earnings were extrapolated for a ten-, twenty-, and forty-five year (lifetime) time horizon on the assumption the observed starting gross earnings advantage of local high school graduates would remain constant.

CHART 1

MAJOR EXPENDITURE CATEGORIES IDENTIFIED
FOR VOCATIONAL EDUCATION PROGRAMS

A. Administration Costs

B. Costs for Supervisors in Vocational Areas

C. Costs for Supervisors and Non-Vocational Areas

D. Costs for Principals or Directors

E. Costs for Vocational Counselors

F. Costs for Non-Vocational Counselors

G. Costs for Academic Teachers

H. Costs for Vocational Teachers

I. Costs for Academic Texts and Supplies

J. Costs for Vocational Texts and Supplies

K. Costs for Academic Laboratory Equipment

L. Costs for Vocational Shop and Laboratory Equipment and Supplies

M. Costs for Operation and Maintenance of Facilities

N. Other Miscellaneous Expenditures

An attempt was made to identify foregone earnings by obtaining earnings information from students who dropped out of the programs and entered the labor force. However, for the time period involved in this study, only seven students had dropped out of the programs and entered the labor force on a full-time basis. Therefore, it was assumed that students who remained in the programs experienced foregone earnings averaging $5,000.00 per annum. This value did appear to be consistent with the earnings of similar aged agriculture workers as reported in the U.S. Census. However, interpretation of the following results must be made with due cognizance of that constraint.

Present Value of Net Benefits

The present value of benefits discounted the net stream of benefits and costs for the programs through the utilization of various discount rates and time horizons. The discount rates represented various levels of opportunity costs for the funds invested in the program.

The present values of net benefits for the local high school programs at the various discount rates for the three time horizons ranged from a low of $2,475.00 to a high of $42,166.00. The present value of net benefits for area vocational center programs ranged from a low of -$4,612.00 to a high of $12,484.00. It must be remembered that the alternative to attending vocational agriculture programs at the two types of schools was dropping out of school and entering the labor force.

Internal Rate of Return

The internal rate of return was computed and resulted in making the discounted value of benefits equal to the discounted value of costs. The result of the computation was a simple percentage which could be compared to an interest rate which represented an acceptable rate of social investment return. The internal rate of return for local high school programs was 20.83 percent; whereas, the internal rate of return for area vocational center programs was 11.80 percent.

Benefit/Cost Ratio

The benefit/cost ratio indicates that funds should be invested in activities for which the ratio of the present value of benefits to the present value of costs is greater than unity. The benefit/cost ratios for local high schools ranged from a low of 1.20 to a high of 4.48. Benefit/cost ratios for area vocational center programs ranged from a low of .63 to a high of 1.97.

Concluding Remarks

Education programs in vocational agriculture may be considered both as a consumption good and an investment good. This study focused upon vocational agriculture programs as an investment good. Consideration of the non-monetary benefits within a cost-effectiveness framework suggests that the area vocational center and local high school vocational agriculture programs in this study were successful to a similar degree in meeting

program objectives. That is, graduates from the respective programs expressed a similar degree of current job preparation, job satisfaction, job placement relatedness, and community involvement. Based on the labor market experiences of the graduates, the analysis suggests that the monetary returns of local high school vocational agriculture graduates are somewhat higher than those of similar program graduates from area vocational centers. Consideration of the monetary benefits within a cost-benefit analysis framework, the investment of funds in vocational agriculture programs a both local high schools and area vocational centers is economically efficient. That is based on a lifetime time horizon of benefits and assuming money costs and benefits are relatively complete indices of total economic costs and benefits.

Vocational education program planning and policy formation in the future will continue to be made within a comprehensive management systems framework. The information provided by econometric techniques such as cost-benefit and cost-effectiveness analyses will be but one very important components of such a comprehensive program management system. The information obtained from benefit-cost and cost-effectiveness analyses should not be utilized for the sole purpose of promoting educational programs that are the least expensive. Perhaps such information should become one additional source of information to be utilized in the identification of appropriate economies of scale for vocational education programs in local high schools and area vocational centers.

Summary Comments by the Panel of Reactors

Paul Hemp, University of Illinois

I would like to commend Dr. Yoder for attacking a research problem, cost effectiveness and cost benefit that many shy away from. If our time permits I would like to find out if and how the results of this study have been used in Ohio by local and state policy makers that allocate financial resources for education or how similar studies might be used. I would like to hear more discussion on your last statement about precautions we should observe in using the results.

Under the interpretation of results if would be helpful to the reader if comparative figures could be given for non vocational program and vocational program costs other than agriculture.

I can't help but wonder where this type of research and evaluation procedure might lead us if we do more if it, and I think we should do more of it. For example, will this approach be used in the future to evaluate our teacher education program? Or to evaluate our state supervision program? In Illinois we have a new area vocational center opening this fall and two of the teachers have been hired in agriculture actually in horticulture. They told me that they will be evaluated and paid on the basis of how many of their graduates are employed.

David Williams, Iowa State University

I would like to join Paul in congratulating Ed and Ohio State for using cost effectiveness analyses in ag. ed. research. I understand that the programs at the high schools and the area vocational centers you studied had similar objectives. I think it was interesting that as far as non-monetary and monetary benefits were concerned there were no significant differences. Then we get to program cost, which came out with significant differences both on the annual cost and the marginal cost. The higher cost in both cases was at the area school. Then in the cost benefit analysis, we generally see the lower return coming from the area vocational schools.

Let me raise some questions. Is it possible to apply statistical tests to this cost benefit analysis which you came up with at the end? Ed said that based upon his findings it would appear that programs should be continued in area vocational schools and high schools because both are economically efficient and similarly successful. Yet I wonder if the study had been conducted on a larger scale would this recommendation hold true? Would those same recommendations be made if the study was ever done or not? Can we make those types of statements on the basis of the type of information we have?

Hopefully we will see more research of this type. It has terrific implications for program management objectives. What would be some acceptable standards, based upon Ed's findings. For example, what would be an acceptable standard for placement related to the area of study which was completed? Is 65 or 75 percent an acceptable figure? I believe 60 percent of the students said they were well prepared for their occupational area. Is this an acceptable standard? If not, would 75 percent be acceptable? What are acceptable salaries? What are some acceptable costs? As more studies are made we will have some actual measures against which we could evaluate.

Summary of Discussion Following the Panel Reaction

Dr. Yoder pointed out that the recommendations made pertain only to those schools which were part of the study. The programs are feasible or worthwhile investments based strictly on the cost-benefit statistics used. Within an overall management system, additional factors would have to be considered.

The number one factor affecting per pupil cost is teacher salaries. Are teachers generally paid better in the area centers than they are in local high schools? Yes, but a larger variation is created by the state standards. Area schools can have from 15 to 25 students for a unit. More students per unit can be enrolled in the local school.

As I reanalyze the data, I'd like to handle foregone earnings differently. I assumed junior and senior dropouts could earn $5,000 per year. I would now subtract part-time job earnings reported during that period of time. There is an upward bias in foregone earnings.

I had a problem in determining what to use for foregone earnings. I was going to use the earnings from dropouts employed full time. However, there were only seven dropouts from all of the programs surveyed. In a conversation with Kaufman from Penn. State, I was encouraged to assume that dropouts could earn a set amount. By varying these figures, the differential changes. But I think the direction will stay the same.

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Factors Related to the Success of New Mexico Vocational Agriculture Teachers as FFA Advisors
A Study by Paul R. Vaughn

Presented by Ralph E. Bender
The Ohio State University

Introduction

Since its inception, the field of teacher education has been plagued with the persistent problem of effectively relating the preparation of teachers to the job they are expected to do. Controversy over the skills and competencies an individual most possess before he/she is considered competent for the teaching profession continuously leads to a barrage of articles and presentations concerning the quality of today's teacher preparation. Agricultural educators are among those who are acutely aware of this problem and controversy. Within the field, there is a constant search to identify more and better ways to prepare vocational agriculture teachers for their chosen profession.

One of the major concerns of teacher educators in agriculture is how to prepare teachers for their roles as FFA advisors. The integral relationship of the FFA to the total vocational agriculture program has created a situation in which every instructional program for future teachers of vocational agriculture includes the development of professional competency pertaining specifically to the role of an FFA advisor. However, when one reviews the related research and literature, he will find that not only is there a great diversity in methods of preparation for future FFA advisors, there is also a general lack of background information concerning what it takes to be an effective or successful FFA advisor. A study cannot be found which has related factors which are supposed to be characteristic of a successful FFA advisor to his actual degree of success in advising and supervising FFA activities.

Purpose of Study

The lack of clarity and disagreement among teacher educators led the author to conduct a research study concerning the preparation of vocational agriculture teachers as FFA advisors. Basically, the purpose of the research was two-fold: (1) to identify characteristics which are related to the degree of success of an FFA advisor, and (2) to identify competencies in which a teacher's perceived proficiency are related to his success as an FFA advisor.

Vocational agriculture instructors who taught during the 1974-75 school year in the state of New Mexico provided the population for the study. In order to identify advisors with varying degrees of success in advising and supervising FFA activities, the 84 teachers were divided into three groups based upon the chapter rating scale predetermined by the National FFA Organization and the New Mexico State FFA Association. The 82 responding teachers indicated their chapter ratings as: 6 National Emblem, 30 Superior; and 46 Non-superior.

A two-part instrument was developed to secure information related to the two aforementioned objectives. Part I was designed to collect information concerning teacher characteristics which were purported to be associated with the degree of success of an FFA advisor. These characteristics were developed through a review of literature and research. Part II of the instrument was designed to secure pertinent data regarding a teacher's perceived level of proficiency in advising and supervising FFA activities. Twenty-nine competencies identified in a study by Cotrell et. al.[1] were used to measure the teacher's perceived level of proficiency. The data were collected by mailed questionnaire, and 98 percent of the questionnaires were returned.

Statistical techniques used were: Stepwise multiple regression, point-biserial correlation, Cramer's Y correlation, Spearman rank order correlation, and Kendall's tau correlation.

Findings

The results from the multiple regression of degree of chapter success on the independent variables in the study revealed that a combination of four variables explained the most variance in the degree of success of an FFA advisor (Table 1). However, only 12 percent of the variance could be explained by the multiple regression of chapter success on these four variables. The individual significance levels within the regression equation indicate that when the contribution of the other variables were held constant, only the teacher's degree of participation in either Alpha Tau Alpha or Collegiate FFA was significantly related to the degree of success in his FFA chapter.

Table 2 indicates that no combination of the independent variables in the study could be found which showed a significant multivariate relationship between the independent variables in the study and a teacher's perceived proficiency in advising and supervising FFA activities. The data also reveal that when other selected independent variables were held constant, none of the variables, by themselves, were significantly related to a teacher's perceived proficiency in advising and supervising FFA activities.

[1]Cotrell, Calvin J.; Chase, Shirley A.; and Molnar, Marilyn J. Model Curricula for Vocational and Technical Teacher Education: Report No. V -- General Objectives, Set II. Columbus, Ohio: The Ohio State University, (1972).

TABLE 1

STEPWISE MULTIPLE REGRESSION OF CHAPTER RATING
ON SELECTED VARIABLES
(n = 75)

Independent Variable	R	R^2	R^2 Change	Partial Regression Coefficient	F
Degree of participation in either Alpha Tau Alpha or Collegiate FFA	.25	.06	.06	.10	3.43[a]
Location of vocational agriculture department (ranked according to population size)	.30	.09	.03	-.14	2.41
Average perceived level of proficiency in advising and supervising FFA activities	.34	.11	.02	.23	2.38
Degree of assistance with FFA activities during student teaching experience	.35	.12	.01	-.08	.84

R^2 = .12; F (4.70) = 2.61; $p < .05$

[a]Significant at the .10 level

TABLE 2

STEPWISE MULTIPLE REGRESSION ANALYSIS OF TEACHER'S AVERAGE PERCEIVE
PROFICIENCY LEVEL ON SELECTED VARIABLES
(n = 80)

Independent Variable	R	R^2	R^2 Change	Partial Regression Coefficient	F
Membership in FFA	.18	.03	.03	.27	2.49

R^2 = .18; F(1.78) = 2.48; $p > .05$

Conclusions

The author developed the following conclusions, based on the interpretations of the data presented in the study:

1. When other factors were held constant, there tends to be no significant relationship between a New Mexico vocational agriculture teacher's perceived degree of proficiency in the 29 student organizational competencies identified by Cotrell et. al.[2] and the degree of success in his FFA chapter.

2. When other factors were held constant, there tends to be no significant relationship between the success of a New Mexico vocational agriculture teacher's FFA chapter and the following factors:

(a) Former FFA membership
(b) Degree of participation in a collegiate student organization other than Alpha Tau Alpha or Collegiate FFA
(c) Degree of participation in school or community activities as a high school student
(d) Grade-point average upon completion of bachelor's degree
(e) Size of community where vocational agriculture department was located
(f) Age
(g) Degree of assistance with FFA activities during student teaching experience.

3. When other factors were held constant, there tends to be no significant relationship between a New Mexico vocational agriculture teacher's perceived level of proficiency in advising and supervising FFA activities and the following factors:

(a) Former FFA membership
(b) Degree of participation in any collegiate student organization
(c) Degree of participation in school and community activities as a high school student
(d) Grade-point average upon completion of bachelor's degree
(e) Size of community where vocational agriculture department was located
(f) Age
(g) Degree of assistance with FFA activities during student teaching experience.

4. New Mexico vocational agriculture teachers who have participated to a high degree in either Alpha Tau Alpha or Collegiate FFA tend to advise FFA chapters that are more successful than teachers who have participated to a lower degree in either Alpha Tau Alpha or Collegiate FFA. This same relationship holds true when other factors are held constant.

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[2]Ibid.

5. The degree of his participation in either Alpha Tau Alpha or Collegiate FFA, his perceived level of proficiency in advising and supervising FFA activities, his degree of assistance with FFA activities during student teaching experience, and the size of the community where his vocational agriculture department was located account for approximately one-eighth of the total variance in the degree of success of a New Mexico vocational agriculture teacher's FFA chapter.

6. No significant proportion of the variance in a New Mexico vocational agriculture teacher's average perceived proficiency in advising and supervising FFA activities can be accounted for by any combination of the following factors:

(a) Former FFA membership
(b) Degree of participation in any collegiate student organization
(c) Degree of participation in school or community activities as a high school student
(d) Grade-point average upon completion of bachelor's degree
(e) Size of community where vocational agriculture department was located
(f) Age
(g) Degree of assistance with FFA activities during student teaching experience.

Implications

Although this study was limited to vocational agriculture teachers in New Mexico, the findings may have some important implications for all teacher education programs in the field of agricultural education. Based upon the findings, the author has developed the following implications and suggestions for further research:

1. Collegiate preservice programs which prepare vocational agriculture teachers should devote more time to preparing teachers for their role as FFA advisors. If former FFA membership is not related to an individual's degree of success as an FFA advisor, then it is apparent that even former FFA members who were extremely active in the FFA will need further instruction concerning the FFA before they can become successful FFA advisors. The findings from the study reveal that as an individual becomes older and therefore, more experienced, he does not necessarily become a more effective FFA advisor. A teacher education program which concludes that it can give cursory instruction on how to advise FFA activities based on the assumption that the individual teacher will learn what he "needs to know" on the job may be seriously and permanently handicapping that individual's ability to become a successful FFA advisor. It is worthwhile to note that of all the factors which are normally associated with the degree of success of an FFA advisor, the only one which was significantly related to that success was one which occurred during an individual's collegiate preservice program. Individual characteristics of teachers, as well as the location of the vocational agriculture program, appear to have no relationship with the degree of success of a teacher's FFA chapter. This would imply that many reasons

which are now given to explain the lack of a successful FFA program are, in reality, excuses for improper preparation of a vocational agriculture teacher for his role as an FFA advisor.

2. An individual's perceived degree of proficiency in advising and supervising FFA activities should not be utilized to measure the effectiveness of any program, preservice or otherwise, which prepares teachers for their role as FFA advisors. The findings from this study indicate that there is no significant relationship between the teacher's perceived ability as an advisor and the actual degree of success of his FFA chapter, and therefore, his perceptions should not be used to measure that success. This also implies that using perceived proficiency is not an acceptable research method for identifying competencies which a successful FFA advisor should possess. This raises the question: Is it also an unacceptable method for identifying competencies for areas of instruction other than FFA? The validation of competencies identified by such methods should be suspect, and continued research should be developed to determine if a person's perceived proficiency in a competency is actually related to his success as a teacher.

3. Collegiate preservice programs for vocational agriculture teachers should offer and encourage participation in activities of organizations designed specifically for agricultural education majors and should continue to improve this phase of the teacher education program. It appears that an individual's degree of participation in a collegiate student organization designed specifically for agricultural education majors may be the best preparatory method now being utilized in a preservice program. It may also be possible that by participating in such an organization, a teacher is influenced in his attitude toward the value of a student organization, which in turn, could be related to the success of his FFA program. Research should be conducted to ascertain specific activities in which participation by the student during his preservice instruction increases the degree of his success as an FFA advisor.

4. There is a great deal which contributes toward the success of an FFA advisor beyond what is currently thought to be important. If all the factors which are now thought to be related to the success of an FFA advisor explain only 12 percent of the variance, then it is obvious that there must be other factors which are of greater importance. Research should be conducted to identify these factors as well as means for maximizing their development in a preservice or in-service training program.

Summary of Comments by the Panel of Reactors

Vernon Luft, North Dakota State University

After reading the paper, I'm still wondering what, other than participation in Collegiate FFA or Alpha Tau Alpha activities, helps prospective teachers become successful FFA advisors.

Dr. Vaughn divided teachers into three groups determined by National FFA and New Mexico FFA Association chapter rating scales. I wonder whether the chapter rating is an appropriate measure of a teacher's success as an FFA advisor. Of the responding teachers, 46 out of 82 reported non-superior chapter ratings. In the two states I have served, fewer than 50 percent of the chapters submit applications. I think we have some successful FFA advisors who do not complete the application.

The findings tell us that we as teacher educators need to provide relevant experiences in ATA or in Collegiate FFA. These experiences should be related to those which the students will have to carry out as local FFA advisors. Beyond this it becomes puzzling to know which competencies really are necessary to advise and supervise FFA activities. I think there are some personal traits that enter in here. I feel the teacher's willingness to spend the time enters in very strongly.

One conclusion referred to a higher degree versus a lower degree of participation in ATA and Collegiate FFA activities. Question - What is the researcher's delineation between higher and lower degrees of participation? Furthermore, if participation in Collegiate FFA activities at New Mexico State University was the only variable found to contribute to the success of advising the FFA then perhaps we should know what activities were engaged in by the successful advisors so that the rest of us can initiate similar activities in our student organizations.

Dr. Vaughn indicated in his implications that many reasons given to explain the lack of a successful FFA program are in reality excuses for improper preparation of a vocational agriculture teacher for his role as an FFA advisor. It disturbs me that his sample consisted only of New Mexico teachers yet the implication is made quite generally. My reaction is - even with the best preparation the FFA advisor may be unsuccessful because he lacks the willingness to devote the necessary time and energy.

I feel that this topic would make a meaningful study in other states. Perhaps the study could be broadened to include several states in the population.

John Thompson, University of Wisconsin

Without additional information about objectives it is difficult to make evaluations. I was concerned about the lack of attention given the theoretical advantages and shortcomings of the professional competencies approach. I think we need to question the selection of factors from a theoretical perspective. When factors external to the individual are used such as whether I was an FFA member, whether I belonged to Collegiate FFA, etc., it seems we are drawing from psychological theory. That's a value judgement now; perhaps a little outdated. The researcher might have considered going to Piaget, discovery learning, or other learning theories which would have led to the selection of a quite different set of variables to study. Such variables as the ability to motivate and flexibility within the personality structure seems to me might have been theoretically stronger.

There are three things about the paper that I really liked. One was the topic itself. It is timely and important. Secondly, I commend Dr. Vaughn for the statistical sophistication of the study. Thirdly, I think the Vaughn paper is very strong in the implications of the study section. The second implication refers to using perceptions to validate professional competencies. He suggested that one's perception may not square with reality. Therefore competencies validated through perception studies may be suspect.

Summary of Discussion Following the Panel Reaction

A worthwhile study could be conducted to determine whether the Better Chapter Application forms really do distinguish between the successful and the not so successful programs.

Dr. Luft said he'd be interested in the Collegiate FFA and ATA activities these successful FFA advisors had engaged in suggesting that there might be a cause-effect relationship. Then Dr. Luft said one factor which might be associated with success was the teacher's willingness to put in the time. I submit you have a selection process going on that in fact gets at the factor you mentioned. Those who are active in Collegiate FFA and ATA are those who are willing to put in the time. These organizations provide a selection-situation which effectively sorts out those who are and are not willing to devote their time to it.

Is perception research as good or as valid as we once thought? Perception research has become very popular in the last five years. However, we know that people who are low tend to rate themselves higher than they are and vice versa. Individuals who have developed a rather mature self concept will give a fairly accurate rating. If we could rate the person's self-concept, then we could depend on his perception.

It was interesting that all of the FFA advisors of the National Gold Emblem Chapters were very active in Collegiate FFA. Maybe we should look at why students are interested in FFA in high school so that we can motivate all of them to be interested by the time they reach college.

So many times a study like this is left to stand alone. These ideas of measuring perceived competence and others mentioned by John Thompson, ought to be a good base for additional research. An excellent study could be developed to test the teacher's motivational ability, their warmth, love dedication to tasks, sematic differentials, etc.

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Factors Associated with the Success of Supervised Farming Programs of Virginia High School Students

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An apparent decline in emphasis on supervised occupational experience programs in Virginia prompted an interest by the state agricultural education staff in the status of these programs and the factors which contribute to their success or lack of success. All forms of supervised experience programs could not be emphasized in the study, therefore, students in the Agricultural Production Option and their teachers of agriculture were the focus of this study.

Success of farming programs was determined by using Productive Man Work Day Units, labor income, and investments to arrive at a Farming Program Score. The Productive Man Work Day units helped us to equate the various enterprises. Farming Program Scores, the dependent variable, was the primary dependent or criterion variable of interest in the study. An additional dependent variable was number of supervisory visits.

Although we were interested in ascertaining the relationship of supervisory visits to Farming Program Scores, we were also interested in finding the relationship of various factors to supervisory visits. Number of visits was then at one time an independent variable and at another time a dependent variable.

A review of literature revealed that the study of factors associated with the success of farming programs had ceased with the passage of legislation that provided for off-farm agricultural occupations. Related studies were those of Hawkins (1953), Davis (1953), King (1953), Nelson (1953), Snyder (1955), Thomason (1955), Hunt (1955), Hinton (1958), Hudson (1962), Mabe (1964), and Schmidt (1965).

Snyder (21) and Mabe (14) identified factors of teacher and student "opportunity" which influenced students' farming programs. Included were varaibles denoting size of home farm, student ownership in enterprises, cooperativeness of parents, school facilities, and teacher characteristics. Hunt (12) identified similar factors; however, Hawkins (19) reported that classroom instruction about supervised farming programs was a determining factor.

Nelson (16), Thomason (22), and Schmidt (20) found that number of supervisory visits were related to the farming programs of students.

Based upon the review of literature and staff generated hypotheses, forty-nine factors which were possibly related to the Farming Program Score were studied. Twenty of these variables were classified as "teacher variables," twenty-three as school situational variables," and six as "student opportunity variables."

Because opportunity for students to have farming programs was felt to vary somewhat by geographic regions of Virginia, a stratified random sample was used to insure that an equal number of production agriculture programs was studied in each of the six supervisory areas. An index of opportunity for students to have a farming program was used to statistically control for opportunity in order to more nearly assess the influence of teacher and school situational variables on Farming Program Scores. Only those schools were used where the teacher had taught the Agricultural Production Option the two previous years, because teacher influence was important in the study. The sample consisted of 24 teachers and 184 students which represented nearly 25% of the teachers and students in the population.

Data were collected in the schools by graduate assistants. Information was collected from the teacher, students, state reports and student record books. All interviews took place within a five week period.

An analysis of variance of Farming Program Scores among the twenty-four schools was made. The difference in Farming Program Scores was significant at the .01 level. Was the difference due to different opportunity to have farming programs? An analysis of covariance of Farming Program Scores was made with opportunity to have a farming program as the covariate. The F-ratio for both the covariate and the main effects were significant at the .001 level. Thus, there were differences in the opportunity among schools but there was a difference when opportunity was controlled statistically.

Correlations of the various factors to Farming Program Scores were made. Correlations of the factors to number of supervisory visits were also made.

The teacher factors which were correlated to Farming Program Scores of students at the .01 level ranked according to most - to least correlation were (1) assist with fairs and livestock shows, r = .475; (2) years of teaching experience in present department, r = -.428; (3) vo-ag training in high school, r = -.425; (4) parent orientation to S F programs, r = .405; (5) schools having advisory councils, r = -.355; (6) hours of adult instruction, r = .351; (7) teachers having part-time jobs, r = -.344; (8) informing the administration, r = .314.

The school situational variables which were related to students' Farming Program Scores at the .01 level ranked according to most to least correlation were (1) percent of students living in rural area, r = .408; (2) miles teacher lives from school, r = -.370; (3) number of non-academic school duties, r = .348; (4) money allotment for ag. department, r = -.344; (5) school having farm plot, r = .295; (6) community cannery responsibility, r = .288; (7) senior high enrollment, r = .278; (8) YF responsibility, r = .271; (9) guidance counselor's cooperation, r = .270; (10) number of students per class, r = .268; (11) number of ag. teachers in department, r = -.249; (12) cooperativeness of administration, r = .228; (13) FFA responsibility, r = .217.

The student opportunity variables which were related to the students' Farming Program Scores at the .01 level ranked according to most to least correlation were (1) parent or guardian participation in FFA and departmental activities, r = .447; (2) size of student's home farm (acres), r = .430; (3) percent of family's total income obtained from home farm, r = .370; (4) percent of farm's operating capital obtained from sources other than home farm, r = -.361.

Much intercorrelation among factors exists and in order to partial out the correlation and select the best predictors of Farming Program Scores it is necessary to use regression techniques.

A stepwise regression of the independent variables, excluding opportunity variables, on the Farming Program Scores was obtained. Stepwise regression selects the single variable that makes the greatest reduction in the error sum of squares. The variable entered at each step is the one with the greatest partial correlation with the Farming Program Score, and when added would have the highest F Value.

The teacher and/or school situational variable which is most predictive of successful supervised experience programs as measured by the Farming Program Score is "teacher assists with fairs and livestock shows." The second most important variable in combination with the first in predicting the Farming Program Score had a negative influence. The variable was "teacher has a part-time job." An analysis of variance test showed that students' Farming Program Scores of teachers who did not have part-time jobs was not significantly higher, however, it was the second best predictor of Farming Program Scores. The third most important predictor was "teacher informs the administration of FFA and departmental activities." The fourth most important predictor when added to the three above factors was "teachers having vocational agriculture in high school." The accounted for variation increased slowly after the first four variables were selected. The fifth most important predictor was "nearness (of teacher) to original home location." The sixth most important predictor of Farming Program Scores of students in the agricultural production option of Virginia schools was "number of non-academic duties performed by the teacher."

In other studies by Hawkins (9), Nelson (16), Thomason (22), and Schmidt (20), a significant relationship between the number of supervisory visits and labor income of students was found. This study did not reveal a relationship between the Farming Program Score and the number of visits. The likely reason is that a high percent of the students, even though they were in the production option, were working for wages in work experience programs. Work experience students are visited more often according to the entire state report and the wages the students earn contribute only to the one category of the Farming Program Score, that being labor income.

Conclusions concerning the relationship of supervisory visits to the teacher variables are listed below:

1. Teachers who assist with fairs and livestock shows make more visits per student in the high school production agriculture option than teachers who do not assist with fairs and livestock shows.

2. Teachers who spend more time in adult instruction also make more visits per student in the high school production agriculture option.

3. As teachers base a higher percent of students' grades on the farming program, the number of supervisory visits is increased.

4. Teachers who had vocational agriculture in high school visit their students more than those who did not study vocational agriculture in high school. This conclusion was based upon both correlation and analysis of variance.

5. Teachers who conduct parent orientations to supervised farming programs make more supervisory visits per student.

Conclusions concerning the relationship of student opportunity variables follow.

1. As participation of parents or guardians in activities of the agriculture department increases, the Farming Program Scores of the students increases.

2. An increase in the acreage of the home farms of students coincides with an increase in the Farming Program Scores of students in the production agriculture option.

3. As the percent of a student's family's income received from the home farm increases so too does the Farming Program Score of the production agriculture student.

4. An increasing dependence by parents on other than farm sources for operating capital coincides with a decreasing Farming Program Score by their children in the production agriculture option.

Conclusions concerning the relationship of teacher variables to the Farming Program Scores of production agriculture students in Virginia are listed below. The conclusions here and elsewhere are based on an alpha level of .01.

1. Students of teachers who assist with fairs and livestock shows have better farming programs as measured in this study than students whose teachers do not assist with fairs and livestock shows. This same factor was the most closely related factor to the number of supervisory visits. In the stepwise regression, this factor was the best predictor of Farming Program Scores.

2. As teacher become older, especially after they move out of the 30-40 year age category, the Farming Program Scores of their students decrease. The relationship of age of the teacher to the Farming Program Scores of his pupils is curvilinear rather than linear or straight line. Farming Program Scores of students of the under thirty age group of teachers are the lowest. The 31-40 year old teacher have students in production agriculture with the highest Farming Program Scores and the scores decline gradually for older teachers.

3. Students of teachers who studied vocational agriculture in high school have higher Farming Program Scores than students of teachers who did not study vocational agriculture as high school students. This conclusion was supported by analysis of variance as well as correlation.

4. Students of teachers who have parent orientations to supervised farming programs have higher Farming Program Scores than students of teachers who do not conduct parent orientations to supervised farming programs.

5. The Farming Program Scores of students are lower in schools that have advisory councils. The conclusion is drawn from the correlation information and from analysis of variance. The analysis of variance evidence was only significant at the .05 level but the negative correlation was significant at the .01 level. (One third of the students were in schools that did not have advisory councils.)

6. As the amount of time the teachers spend in adult instruction increases so too does the Farming Program Scores of their high school production agriculture students.

7. As the extent to which teachers inform the administration about FFA and departmental activities increases, the Farming Program Scores of their students also increases. The author advances the theory that good farming programs are a reason for informing the administrators. This factor was the number three predictor in the stepwise regression analysis.

Farming Program Scores are not uniform from school to school in Virginia and the differences cannot be attributed entirely to better opportunities to have farming programs in some schools. When opportunity factors are higher, the Farming Program Scores will be higher. If opportunity to have farming programs were equal in every school, there still would be higher Farming Program Scores in some schools than in others due to teacher and school situational factors.

From the information collected from interviews in approximately twenty-five percent of the schools that have Production Agriculture Options, certain conclusions could be drawn.

1. The number of supervisory visits to students in the Production Agriculture Options is low. The number of supervisory visits for the 184 students in the sample was 1.55.

2. A high percent of students in the Production Agriculture Option have weak farming programs. Only 73 out of 184 students had an investment in a farming program that exceeded $100.

3. The Production Agriculture Option does not rely heavily on ownership projects as the experience program for students. Work experience on farms or off of farms is engaged in by a high percent of students. In the sample two-thirds of the students were on work experience programs, half of whom worked on farms.

No effort was made to sum the factors that contribute to teacher load. The kinds of activities that help make up the load were important factors related to visits and Farming Program Scores.

1. The more in-school classes that a teacher teaches, the lower will be the number of visits to his students. The same conclusion concerning Farming Program Scores cannot be drawn.

2. As the number of students per class increases, the Farming Program Scores of students decreases. The same conclusion for number of visits cannot be drawn unless one is willing to make the decision at the 95 percent confidence level instead of at the 99 percent level of confidence.

3. It is not the amount of load but the kind of load that is related to the Farming Program Scores of students and the number of supervisory visits they get. The responsibility for young farmers, FFA, community canneries and non-academic duties are all indicators that the Farming Program Scores of students will be higher. Having FFA and young farmer responsibility are indicators that the number of supervisory visits will be higher.

To increase the Farming Program Scores of production agriculture students in Virginia the following recommendations are given.

1. Teachers and students should become involved in those activities which give recognition to good farming programs such as fairs and livestock shows.

2. Teachers should not become involved in part-time employment which will reduce substantially their time and effort to promote good farming programs.

3. Students from farms where parents were also vocational agriculture students and other students having high opportunity indexes as measured in this study should be attracted into the Production Agriculture Option.

Some recommendations for further study follow.

1. Replications of this study should be done in other states. The study should be replicated in a farm state to see if the older findings are still vaid. In a replication, one more factor should be entered in the opportunity factors which was left out of this study. That factor is number of brothers the student has.

2. Further investigation concerning the age of teacher and its relationship to Farming Program Scores needs to be done. The results of this study does not make it clear whether a 30-40 year old teacher is the best age teacher to have employed or whether the teachers who happen to be 30-40 years old now have had a different preparation and would also be the best teachers as they get older regardless of age.

3. A similar study should be conducted in Virginia for cooperative education programs in agriculture now that the findings concerning farming programs are available.

4. A study should be made to evaluate alternative scoring systems for farming programs and the opportunity to have farming programs.

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Summary of Comments by the Panel of Reactors

John Thompson, University of Wisconsin

It has been helpful for me to categorize research as either theory building or theory testing. I have difficulty in classifying this study in either category because information about the theoretical notion was not provided. I would like to have seen some clues as to why have occupational experience programs? What ought to happen as a result of occupational experience programs? Not having this type of guidance gives me difficulty in reacting to the paper.

There is so much data in this study. It takes a while to get a handle on it. I would like more time to look at the coding used in the study to get at the correlations. Several correlations probably resulted because of the way the variables were coded. The fact that rural students were given a "five" score, town students a "three," and urban students a "one" for determining the index of opportunity and yet the percent of students living in rural areas correlation was the highest. It seemed to me that this correlation was built through the methodology. We'd have to look at that more carefully to make observations.

Vernon Luft, North Dakota State University

In regard to conclusions - the stepwise regression was used to predict the success of supervised experience programs as measured by the farming programs score. All the factors indicated seemed logical in predicting successful supervised experience programs except the number of non-academic school duties performed by the teacher. It would seem that the more effort expended toward non-academic duties the less time and talent could be directed toward S.O.E. programs. But the study indicated this relationship is apparently not true. The study seemed to point out, the more involved the teacher, whether with young and adult farmer programs, non-academic duties, etc., the more time the teacher spent supervising programs and the higher the program scores. I think this is an indication of a person's willingness to commit his time and ambitions to the profession.

Your correlates of supervisory visits which were correlations of various school situational factors with the number of supervisory visits by teachers turned out much as I would have expected with the following two exceptions: (1) an increase in the school's monetary allotment is associated

with a decrease in the number of supervisory visits. One would think that as money allotments increased more funds could be used for supervisory visitation travel, and (2) as the number of ag. teachers in the department increased, the number of visits per production agriculture student decreased. Apparently teachers did not have more time to conduct supervisory visits as the teacher staff increased.

In general your study was interesting and well done. Dr. Krebs reported that studies ought to be long range in nature. My questions are: How well you use this study to improve supervised occupational experience programs in Virginia and how can we build upon this study to better prepare teachers to improve farming program scores?

Summary of Audience Discussion

Dr. McMillion reported the study will be publicized. He intends to meet with the 24 teachers to obtain further information and share the findings. Dr. McMillion indicated he would like to study factors associated with placement type opportunities. He said they were not expecting to find so many people working for wages in the production option. Students who had only placement employment should have been dropped out of the study.

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The Effect of Instructional Materials on the Leadership and Character Development of Vocational High School Students in Indiana

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The emphasis of vocational youth organizations has been to encourage leadership and good citizenship in its young people. Sidney P. Marland (1971), former U.S. Commissioner of Education, identified leadership and good citizenship as the single purpose of vocational youth organizations from their inception. Vance and Bregman (1970) reported that the National Institute on the Role of Youth Organizations had stressed the need for student leadership and had conducted extensive work on leadership development. Because of these goals and because of the lack of instructional materials for use by vocational teachers to facilitate teaching leadership and character development, research and development activities were directed toward filling this void.

Teaching with Simulation

Simulation has been advocated as a technique for leadership training by a number of researchers such as Brandon (1970), Koeniger and Ward (1972), Meckley (1970), and Rowe (1973). Meckley (1970) defined simulation as "an operating representation of the central features of a real circumstance aimed at providing a relatively safe, simplified, and germane learning environment" (p. 26). Simulation has, for example, been used successfully in driver, air force, and naval training programs. Simulation often involves some type of role playing on the part of the learner. Used in the leadership training of members of youth organizations, simulated role playing involves various members taking on leadership roles in a particular setting.

A simulation approach to developing leadership is advantageous in several ways: First, simulation provides a realistic learning environment; second, simulation generates a high degree of participant involvement; third, simulation encourages the learner to actually apply leadership principles; and fourth, simulation can be adapted to be used with either large groups or by individuals. Because of these advantages, simulation exercises were considered to be an important part of instructional materials for leadership and character development.

Design of Project

A project was designed to develop instructional materials, Leadership Training Units for Vocational Youth (Richardson, Feldhusen, Howell, Hynes, and McFadden, 1976), and then to evaluate them in terms of effectiveness in developing leadership and character in high school vocational youth. A three stage model of instruction (Feldhusen, Ames, and Linden, 1973) was used to organize the materials into a systematic sequence. The model includes: (a) a knowledge-acquisition stage (stage one) - the function of materials at this stage is to convey to the student basic knowledge about each of the leadership skills and character traits; (b) a knowledge-application stage (stage two) - the function of materials at this stage is to provide the learner a safe environment in which to practice new skills; (c) a knowledge-synthesis and personal relevance stage (stage three) - the function of materials at this stage is directed toward individual interpretative activity designed to synthesize what has been learned from stages one and two of each topical area. The advantage of this model is that the teacher spends less time as lecturer and more time as small group facilitator and consultant guiding the application and synthesis of knowledge.

The three-stage model of instruction was used in each of the 13 units of the instructional materials. The content of the units was identifed as being necessary for use in leadership and character development by a review of the literature and the advisory committee. Also, materials related to leadership development were obtained and reviewed to identify the important skills and functions of leaders and group members. These skills and functions were then independently categorized into broad topical areas by the project staff. The Stogdill (1974, p. 93) summary of factor analytic studies involving

leadership was useful in identifying the broad topical areas. The results of the categorization were the formulation of the following 13 areas of leader and group member skills:

Unit 1: Introduction to Leadership
Unit 2: Planning and Initiating
Unit 3: Parliamentary Procedure
Unit 4: Developing Group Goals
Unit 5: Levels of Leadership in a Group
Unit 6: Skills of a Group Leader
Unit 7: Personal Characteristics of a Group Leader
Unit 8: Skills of a Group Member
Unit 9: Developing Group Cohesiveness
Unit 10: Effective Committees
Unit 11: Communication Skills
Unit 12: Internal Operations of a Group
Unit 13: Outcomes of Leadership

Unit 3 was not tested since many of the teachers do not include parliamentary procedure as a part of their curriculum. A teacher and a student manual were developed for the presentation of the material. The teachers manual differs from the student manual because of the inclusion of the following: preface which describes the methodology involved in teaching the material, supplementary readings, self-quiz feedback sheets, mastery quiz questions and answers, information and answers for the group simulation projects, and supplementary group simulations.

The Problem

The major purpose of the study was to evaluate the effectiveness of the three stages of instructional materials in terms of their influence in developing leadership and character in high school vocational youth. A comparison was made between students in classes using the instructional materials, Leadershi Training Units for Vocational Youth, and students in vocational classes no using the instructional materials for leadership and character development. This comparison between groups that used the instructional materials and the groups that did not use the instructional materials was made with the following groups of high school vocational students: those enrolled in distributive education, agricultural education, home economics education, office education, industrial education, and cooperative education.

Procedure

Pilot testing Units 1, 2, and 4 in the vocational high school classrooms was used to determine their usefulness. Reactions from teachers, students and observers indicated that the Three-Stage Model, as implemented in the leadership units, and the material which was included in the units worked well with the vocational education classes.

A one day workshop was held for the teachers participating in the project. An explanation of the field-test design and the appropriate use of the three-stage leadership units was explained to the field-test teachers. Teachers who could not attend the workshop were informed of the field-test procedures by mail and a telephone conversation.

The formal field test consisted of two levels of treatment, use and non-use of the instructional materials, which were randomly assigned to selected intact classes. From the population of classes accessible to the project monitor in distributive education, agriculture education, home economics education, office education, industrial education, and cooperative education, a stratified sample of 31 classes were identified. Because of anticipated variation in the amount of previous exposure to leadership training, type of youth organization served as a blocking factor. Thus, within each of the six types of youth groups, three were assigned at random to the experimental group and two teachers to the control group with the exception of the home economics education teachers with three and three respectfully. The design for this study was a "Pretest-Posttest Control Group Design" for state one and three and "Posttest - Only Control Group Design" in stage two (Campbell and Stanley, 1966, p. 8). Because of time limitations the teachers were asked to teach a block of four of the thirteen units which were assigned at random.

Each of the stages of the three stage model were evaluated separately. Since the objective of stage one was to provide factual information about leadership skills for the students, a test to measure student recall was developed to test the effectiveness of this part of the unit. In stage two a teacher rating of leadership and self-reported ratings of leadership were used to indicate the amount of leadership skills acquired from these sections of the units. Responses to the Ideal Leader Behavior Description Questionnaire (Hemphill and Coons, 1957) were used to identify the attitudinal and personal relevance effects of stage three of the units. Two dependent variables were tested, "consideration" and "initiating action". Consideration refers to a person-oriented ideal leader, whereas initiating action reflects a task-oriented ideal leader.

Findings

1. The results of the effectiveness of stage one of the instructional materials as measured by the class mean score on the content mastery posttest show that the use of the materials, Leadership Training Units for Vocational Youth, did result in significant differences in the students' factual information about leadership skills when students using the instructional materials were compared with students who did not have the use of the instructional materials. The experimental group mastered significantly more factual leadership knowledge than did the control group in all the units that were field tested. Significance of the test for difference between two groups was found at the 0.01 level for units 1, 2, 4, 5, and 10, 11, 12, 13 at the 0.05 level for units 6 through 9.

2. The results of the effectiveness of stage two of the instructional materials show that the use of the materials, Leadership Training Units for Vocational Youth, did not result in significant differences in the students' ability to apply, analyze and evaluate the leadership knowledge when students using the instructional materials were compared with students taught leadership skills without the use of the instructional materials. It was found however, that students using the instructional materials received generally higher ratings for their leadership ability than students who did not use the instructional materials.

3. The results of the effectiveness of stage three were tested using two dependent variables, "consideration" and "initiating action". The results as measured by the dependent variable "consideration" show that the use of the instructional materials did result in significant differences at the .01 level in the students' person-oriented attitude when students using the instructional materials were compared with students who were not using the instructional materials. The results as measured by the dependent variable "initiating action" show that the use of the instructional materials did not result in significant differences in the students' task-oriented attitude when students using the instructional materials were compared with students who were not using the instructional materials.

Conclusions

Evidence indicates that students in vocational classes using the instructional materials are likely to achieve higher mastery scores on factual information concerning leadership.

The overall instructional goal for stage two of each unit was to teach students to apply, analyze and evaluate the leadership knowledge they had learned in stage one of each unit. Because students were involved in small group simulations of work projects at stage two, the appropriate test of the effectiveness of this type of learning was to obtain ratings of leadership performance. Leadership ratings were therefore obtained from the teachers and students themselves in the form of a self-report of leadership performance. However, when considering the effect of the instructional materials on the students ability to apply, analyze and evaluate the leadership knowledge, the fact that no difference was found may be accounted for by the lack of instruments to determine this. Through the formative evaluation the teachers indicated that stage two was a very important part of the instructional materials. However, since this was not shown in the summative evaluation it would suggest that better instrumentation is needed.

In considering the effectiveness of stage three it is the opinion of the author that the development of attitudes which are person-oriented is a major goal of any leadership instruction. Even though the use of the instructional materials had no measurable effect on the students' task-oriented attitudes, the fact that they were effective in forming positive attitudes which are person-oriented is important.

On the basis of the results of the evaluation of the instructional materials with the three stage model, it was concluded that the instructional materials, Leadership Training Units for Vocational Youth, were of great value in developing leadership and character in high school vocational youth in Indiana. The primary implication for future research on three-stage leadership training is to develop more valid assessment procedures for stage two of the model.

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Summary of Comments by the Panel of Reactors

Vernon Luft, North Dakota State University

I found the study to have a very strong research design. Randomization was used wherever possible and according to my interpretation was used wisely. I found the three stage model interesting but had some problems interpreting the findings relating to stage two. Dr. Vaughn indicated in the knowledge-application stage, the function of materials were to provide the learner with a safe environment in which new skills may be practiced. But it seemed to me he tested the extent to which students were able to apply actual knowledge gained in stage one. I believe more clarification or explanation was needed.

The problem was very clearly defined and procedures done very scientifically. Under stage one, significance at either the .01 or .05 level was important for knowing that the instructional materials provided students with factual leadership information.

As mentioned stage two created some problems for me. No significant difference in the ability to apply, analyze and evaluate leadership knowledge was found when students using research materials were compared to students taught leadership without the use of these materials. Again I ask - Is the function of stage two and what you tested for in stage two the same? If they are different that may have something to do with not finding significance at this stage.

You indicated that probably a weakness at this particular stage was instrumentation. Were the data collected objective type or perceived - subjective type data? In general I think we are badly in need of excellent leadership training materials. The people at Purdue University involved in this project are to be commended for their work in this study.

John Thompson, University of Wisconsin

The first reaction occurred to me as I read your review of simulation. It seemed to me that you emphasized the cognitive area of simulation but ignored the affective dimension. Simulation should be given more credit for developing the affective areas.

On page 1, you sensitized me to the problem in our discipline of the lack of leadership. However, you did not sufficiently sensitize me toward the research problem. I think the paper could be strengthened by more clearly delineating the research problem.

I was pleased to see the theoretical framework. I would encourage you to look at that theoretical framework as you draw implications. What implications about the theory can we draw by the conclusions you have made?

Maybe its a personal bias, but I'm not comfortable using .01 and .05 significance levels to measure differences between the experimental and control groups. Use one level or the other but not both. You discussed means but didn't tell us how those means were tested. More precision in this part of the paper would have been helpful.

In summarizing, I think the research area of leadership is a fruitful area to research. The research design was particularly well done. The research design would have allowed you to be more precise with the hypothesis. I liked your implications. You rapidly passed over a point that I thought was very important. You wrote, "Through the formative evaluation, the teachers indicated that stage two was a very important part of the instructional materials. However, since this was not shown in the summative evaluation it would suggest that better instrumentation is needed." I was glad to see you go back and question the instrumentation. Often we develop an instrument but fail to go back and make judgements about it.

Summary of Audience Discussion

Knowing to what extent the control group taught leadership development is a critical factor. Did the control group teachers teach leadership development an X number of days? Specific instruction in the schools was not monitored. Experimental and control group teachers attended a workshop for orientation and instructions. All of the teachers seemed very positive about the project.

The descriptive aspects of this study have been overlooked. The first thing the teacher wants to know is - how well do students master what they are suppose to if these materials are used? That data is available or dependent variable scores could not be obtained. But notice this descriptive data is not presented. One group could score 40 percent correct and the second group 20 percent. We say one is better than the other when in fact neither is any good. Don't overlook the descriptive data when using these inferential statistics.

I think the agricultrue teacher has a longitudinal advantage relating to studies of leadership and character development since he has the same students for four years. Some long range studies should be conducted to measure leadership and character development over a greater period of time.

Are these simulation based materials quickly adaptable for use in other states? The materials have been adaptable to any group with which we have worked in Indiana. The materials are modified depending upon the teaching style used. The State Board will produce the materials at the Indiana Curriculum Materials Center and will be available on a cost recovery basis in October.

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Improving Research in Departments of Agricultural Education

Robert E. Taylor, Director
The Center for Vocational Education
The Ohio State University

Welcome to The Ohio State University. I always enjoy the opportunity to deal with agricultural education; that was my home field. I wish that my present duties permitted me to spend more time with you. You are a wonderful group: agricultural education has made tremendous progress and has provided tremendous contributions not only to the field, but to vocational education as well.

I would like to visit informally about some observations I have accumulated over the years concerning research and development in agricultural education. I hope they are helpful as they grow primarily out of my own experience. I do hope we will have an opportunity to raise some questions.

I think we are all concerned with how we can improve the quality and quantity of research in agricultural education. We all recognize that research in agricultural education, like research in education and vocational education, suffers from some of the same problems. Too much of it is done by graduate students, which indicates that we don't have enough people, full-time or part-time, devoting significant portions of their time to research and development. We suffer, in many instances, from lack of conceptual framework so our efforts are disjointed and don't deal with the most significant problems in the field. We lament from time to time the misunderstandings that we have or that people seem to have about research, and that stretches from the Congress of the United States given the National Science Foundation problem on Man - A Course of Study, down to administrative personnel in areas like OVA, state departments, and perhaps even in our own universities. What I would call programmatic research and development dealing with the significant problems, provides for sustained cumulative impact over time, typically involves various stages of the R&D process, calls for an R&D team of people, and has the follow-through to the point of impact or utilization.

Research Policy Considerations

In trying to get at observations and deciding what alternatives we have with respect to improving the quality and quantity of research and development, I will start from the beginning phase of research policy. One point that we could look at for improving research and development in agricultural education is the consequences of federal policy with respect to research in vocational education and, therefore, agricultural education. One aspect is the degree to which agricultural educators have effectively been a part of state planning concerning the state share of Part C. During the last legislation cycle, the states not only have had 50 percent but in most respects also have had control and access to the Commissioner's share. Many of the research and development dollars in vocational education have been under the control and management of the states. The questions that arise are - What are the management procedures for R&D funds? How are priorities established? What is the involvement of research elements of the vocational education and agricultural education communities with respect to establishing priorities?

I have been serving as a member of COVERD, the Committee on Vocational Education Research and Development, that has been conducting a ten-year study of vocational education through the National Academy of Sciences for the U.S. Office of Education. One of the things that they are concerned about is - What has been the impact of research? And gentlemen, it's hard to find. It is hard to trace. We know that, knowledge accumulates slowly but also it is hard to track impact. In my judgment, part of it is the lack of a systematic view by the vocational education R&D community--the lack of systems and procedures to move vocational R&D and agricultural education R&D systematically into practice. I think it has a lot to say about the things that we have chosen to investigate. I think it has a lot to say about the size of projects we have funded and the kinds of procedures we have used. The point I am trying to make, however, is that agricultural educators need to be a more significant part of the planning and management of the state's share of the federal vocational education R&D dollars.

The other point concerning policy is that vocational education, and therefore agricultural education, needs to move immediately toward seeking state authorization for research. Over the years state vocational education personnel, state directors, teacher educators, and others have been so successful in influencing federal legislation that they did not see any need to have state authorization for vocational education. In effect, the vocational education profession and community controlled or dictated what was to come out in the federal legislation. Then we use the federal legislation as a lever on state groups to say, "Hey, we need matching funds. We must do this because it's a federal requirement," etc. That was the rationale for our program. Those of you following the current legislative cycle know that the coalition of AASA, NEA, AACJC, and other groups will assure that federal legislation in vocational education is no longer going to be the private concern of AVA. All of the educational associations and many others, labor unions, chambers of commerce, are going to have a say in vocational education legislation. Those of you who have studied the drafts of the current bill

know that the accountability has increased. Accountability with respect to placement, training for known employment, impact on unemployment rates, etc. are still there. There is another area of accountability which could be labeled social issues. This includes access, equity, meeting the needs of special groups, etc. that represents a dual type of accountability.

It's imperative that state vocational education groups be concerned with improving their state authorizations for vocational education. Any state authorization for vocational education ought to deal with one of the R&D requirements. One of the concerns that COVERD shared with Congress, The Office of Education, and others was that if vocational education R&D is good, then why aren't the regular Part B monies going into it. Why aren't some states going beyond that in terms of their investments? There may be an isolated case or two but, by and large, it is the federal share. In terms of long-range strategy, in terms of policy, we really need to be concerned with achieving state authorization for research in vocational education and agricultural education and for the broader issues of vocational education as well.

The third policy area that I think needs to be examined concerns support for agricultural education research through the experiment station. Our record is spotty and largely disappointing. It strikes me that we may be going at it in the wrong way. It may well be that a committee of AATEA or an ad hoc committee made up of the several regional research conferences ought to try to meet with the national conference of directors of state experiment stations and deal directly with the problem on the policy level. They could track the next cycle of legislation and see what can be done to set a better climate for encouraging each individual institution to be a part of experiment station research. There are, for example, a number of substantive areas that agricultural education ought to be a part of: areas of occupational aspirations, areas of career planning, rural development, the problems of access to a range of career options, the delivery system, the organization of education in rural areas, extension education as a unique form, agricultural education, and so on. It seems to me that this needs to be approached at the policy level.

Fourth, as you know the Walker Bill is pending in the Congress. Known as House Resolution 11743, it is a bill to establish a national agricultural research policy committee. In effect it tends to introduce some disequilibrium into the experiment stations in the sense that no longer will all of the dollars flow out to the stations to be allocated. In a sense it provides a national policy board for grants on a competitive basis. The implication is a national field-initiated grant competition to any qualified university, not just land-grant schools, to work on problems of agricultural research, agricultural education, and nutrition. This has passed the House, was referred back to the House Committee, and I assume is a waiting Senate action. This is another policy area that those concerned with agricultural education research ought to be following very carefully. The point that I am trying to make is that we need to get to the head of the stream where the policy is formed and we need to see if adequate consideration cannot be given to the unique requirements of agricultural education.

Impact of Staffing Patterns on Research

The other area representing policy that could be reviewed to improve the quality and quantity of research in agricultural education is the manner in which we staff departments of agricultural education and the percentage of time that we allocate to research. One of the things that might well bear examination is, for example, do we have an equivalent of a half FTE. How do we deploy that? Do we scatter that over three or four people in 10 percent 20 percent, or 25 percent time, or do we tend to concentrate that into a critical mass where the percentage of time assigned to an individual is at least 50 percent so there can be accountability? The other is that while universities are arenas of scholarship and are concerned with both the instruction and the utilization production of knowledge, I still think departments of agricultural education are more teaching-oriented than they are research-oriented. That may be a reflection of staff interest, it may be a reflection of pressures, or it may well be a kind of historical artifact. It may not be something that we have consciously addressed.

But if, for example, a vacancy occurs in the staff, to what degree is the option available that some of the instructional load be shared by advanced graduate students. Are we able to enrich their internships, take the salary savings, and invest the savings into a research position. How does the resource allocation in your departments compare with that of other departments? What's the differentiation of your staffing in terms of professor, associate, assistant, research associate, and other kinds of positions. The point I am trying to make is that I don't think we can expect massive infusion of dollars to reestablish the balance that we presumably would like to see between research and teaching. We're like the fellow flying the single engine airplane across country, we have to keep it flying and yet we have to repair it and maintain it while it is in flight. In a sense we are dealing with the variables that we control, that we can do something about. I don't see any Messiah on the horizon nor any big lump of dollars coming in.

Current Approaches to Research

Let me move then to another kind of category that would be labeled "How Are We Going About It?" "How Are We Doing It Now?" What appears to be some of the situational factors that might influence quantity and quality of research in agricultural education? One I would identify is the graduate students' attitude toward research, both during the time that they are in the program and at the time that they leave. An interesting experience for me as director of the Center, has been interacting with a range of graduate students. Over the past eleven or twelve years we have had 260 or 270 GRA's from eighteen different departments of the University who have interned at the Center, generally for about a year and a half to two and a half years. Until recently, I conducted an exit interview with every GRA who left the Center. As a result, I picked up several observations. One is the contrast of vocational education to other disciplines, like sociology or economics. The vocational education graduate student had allowed less time in his own pattern and plan to complete the degree. It was something they had to do

and hurry home. Most of the people coming into the Center from other disciplines said, "Well I'm here for two, three, or four years; this is a reasonable time allotment out of my life; I am going to make it a rich experience." They didn't seem to have quite the pressures to complete the degree program. The attitude of GRA's from other disciplines toward the research requirements, the dissertation, etc., seemed to be more positive. They were looking forward to the research as a part of the experience and had allowed adequate time for that. Most typically they had planned to complete the degree before they left. The non-vocational educational students began to get a hold of their studies earlier in their course experience. Almost in the first and second quarter they began to hold alternative ideas that were potential dissertation topics. The research experience seemed more interwoven throughout the experience.

The second observation concerns how we are doing it. In visiting with the Center's GRAs, a frequent topic was, "I come to Ohio State to study under Professor X in psychology so I could do my dissertation on topic Y." What that seems to imply is that part of their career planning experience and selection of the institution took into account the kind of research in which they would engage. Apparently, research was a significant part of their post-doctoral experience. Therefore, they wanted their doctoral experience in research to lead into what they presumed at that point to be their desires with respect to other research. It also seems to imply that the advisor directed dissertation studies in a limited area. There was an additional measure of specialization with respect to the advisor that related to his or her own research program. Again, it might further imply that the advisor had a research program and that in one respect the graduate student's dissertation became an instrument or mechanism for furthering an incremental or cumulative part of that graduate advisor's research program.

The question that I would like to raise is, "Does it seem logical that as the professions of vocational education and agricultural education mature, prospective graduate students might select an institution to attend based on their interest in certain kinds of research activities and the degree of specialization and competence that various faculty members possess?" It might be that someone wanting to do research in farm management might move to Minnesota. Someone wanting to do research in another area might select a different institution. There is that kind of specialization trend. Then too, if we say that the dissertation experience is supposed to an internship or apprenticeship designed to provide a positive and meaningful learning experience and an introduction into the research process, does it hold that an advisor who is specializing in a field, has a good research program from the standpoint that definitions are well worked out, is working on a significant topic, has a good conceptual framework, has current research which builds from previous work, and is cumulative and additive, has a common data base, and so on, is likely to present a more meaningful experience or apprenticeship than grabbing hold of the isolated kinds of experience. As I look back, I realize that I advised dissertation studies that I was really not qualified to advise because I was trying to cover too wide a breadth and trying to honor to too large of an extent, "the interest of the student." And yet as we look back to the student days, one of the most

agonizing experiences is probably selecting the topic. It may not be a real topic for them. It may be a pseudo topic. The potential of a realistic topic that again is programmatic, that is dealing with something significant, that is a bigger part of the R&D enterprise, is more likely to be the kind of career pattern and experience that would be supported. The other would be to try to make the research experience as realistic and as meaningful as possible, not artificial or unrealistic, by more effectively advising the student as to the time and resources required to develop a dissertation. That would relieve the students of some of the artificial pressures or constraints that they place on themselves. They say "here is something that needs to be done," and that might take fifteen or eighteen months. But they have only allotted ten months of their lives to get that done. Many get it done but their attitude toward research is negative when they are finished. We are all paying the price for that. That would be one of my theses for today.

As a third point we should also examine our own attitude toward research. To what degree do we provide an adequate role model for graduate students with respect to our attitude toward research? Do we tend to work from an experience base, or do we tend to work from an empirical base? Do we tend to cite research as the basis for what we profess or do we tend to deal primarily from our own experience? How do we do classwork? Do others tend to reinforce the role and the importance of research?

The fourth point is that we need to think more in terms of programmatic or systemic approaches to our field. First of all, we should be trying to do a more effective job of establishing priorities, of meaningfully sorting through a range of alternatives for investigations, and making a purposeful and deliberate choice on what we are going to investigate because of its significance, utility, and potential impact. Then we need to recognize and to place the systemic steps of research, development, pilot testing, validating, disseminating, technical assisting, and installing. I think that the lack of follow-through in some of our research is one of the things that is plaguing us and perhaps partially explains the lack of impact.

The fifth point concerns how this relates to others. Are we in all of our instruction programs, especially undergraduate, turning out what you might label effective or intelligent consumers of our field? I enjoyed experiences with some of the finest teacher educators in agricultural education through my own program. In Arizona I can remember looking at the broad scale of data: the experiment stations were at the top and barbershops were down near the bottom. There was literally no reference to research as a basis for the pedagogical side of teacher behavior. I wonder to what degree these factors are interrelated. Are we today graduating prospective agriculture teachers who look to research and agricultural education as a basis for modifying, altering or determining their performance and behavior as teachers?

The sixth point deals with the attitude of state administrators in vocational education toward research and the problems, tradeoffs, or alternatives that we might have here. We are well aware of the stereotypes held by the state administrator: That research is a necessary function of the teacher educator. It i equivocable that when you deal with the problems of trying to get adequate control, you typically delimit the scope of the study as if you are dealing with something less significant than education. In other words you are dealing with those kinds of tradeoffs. If is like the research that is so miniscule that its impace on current practices is limited. It is like the story of the fellow going down the street in his hometown and running into an old friend. He said, "Where have you been? I haven't seen you for quite a while, John," John said, "Well I have been away to speech therapy school." "Fine John, what did you learn?" John said, "Well I've learned to say 'How now brown cow.'" "That's great, John." John responded, "But I can't use it very often."

One aspect that relates to the earlier point of trying to effect state policy for vocational education research, might deal with the possibilities of teaming up with other service areas or other institutions in your state that are responsible for agricultural education. It might involve establishing a research network in agricultural education. It might involve establishing a research advisory committee. It might involve taking a look at the evaluation results of the program and selecting the most significant problems, not necessarily in terms of interest to research, but what's most important for the program manager. In other words, how can research help reduce uncertainty for the program manager? How can research and R&D processors help improve the delivery and the generation of alternatives in state programs? Maybe I'm trying to approach it as problem-solving rather than trying to extend the discipline. That has to be done too but when you are dealing with state program managers, we have to ask what do we have that they need? To put it more directly, how we can help them solve their problem. The degree to which we can provide a rational basis for what we would like to do, and if this is consistent with the evaluative data, then I think we can break out some R&D funds to move in these areas.

As you know, one of the current fetishes around now is policy studies. In a sense, this is just an attempt to bring to bear all that we know about a given problem, to look at policy alternatives, what the consequences of these alternatives are, and try to come up with a reasonable course of action that takes into account the empirical things and also deals with political reality. That's what state program managers have to do everyday. We have a real service to provide to them both in terms of making their life easier and also in terms of improving state programs. Out of that derives support that we can work on things that extend the discipline. Another way of looking at this is that we are trying to synthesize knowledge. This comes back again to the fragmented, isolated outputs that we typically have in research. We must finds ways that we can synthesize and aggregate several studies into something more meaningful so that the sum impact is more than the sum of the bulk. We need more work and attention on synthesizing and aggregating related studies around problem areas to provide logical take-off points for further research that provide implied courses of action for program managers and others with respect to policy alternatives.

We also have to keep in mind that as agricultural educators we are concerned with trying to add to the structure of knowledge as it relates to agricultural education. The question is, if there is a discipline of agricultural education, what is unique to agricultural education in terms of R&D processes and in terms of the empirical base? Is it merely applying vocational education principles and practices to occupational areas, or is it taking educational procedures and methodologies and applying them? Is there a discipline of agricultural education? If there isn't, then what is the nearest thing that we have to it and how do we go about systematically trying to further delineate, improve, and build upon that? Since agricultural education is a part of the vocational education community, what we must do is look at the full range of R&D needs that exist in the states, try to move toward some systematic planning and management of the R&D process at the state level, and try to effect policies at the state and federal level with respect to agricultural education research and development. We must attempt to institutionalize R&D through state authorization and to lay out a systematic program of inquiry.

The final point that I would like to discuss is the option we have for reorganizing and redeploying our resources and talents to see if there are ways that we can make a more significant impact on the quality and quantity. We did a quick survey of this group. One of the questions concerned the percentage of time that is assigned to research at the present time in terms of professors, associate professors, and assistant professors. We haven't had time to do correlations but professors presently show 31 percent assigned for research, associate professors show 20 percent, and assistant professors show 58.5 percent. In terms of desired time, what would you really like it to be? Our second question to you was what would be the preferred time? Professors, as you might expect, like it as it is. Associate professors want to move it to 25.5 percent and assistant professors to 29.2 percent. The other matter concerned publications. Professors average 1.9, associate professors are 2.4, and assistant professors are 4.0.

Concluding Remarks

Research in agricultural education is the key to its future. Due to its prominence and impact on the field, agricultural education must become more involved in research policy decisions. Both staff preparation and assignment to research must be continually assessed to insure high quality departmental research and advisement to graduate students engaged in thesis and dissertation. The challenge before us is to maintain the current increased quality trend of research in agricultural education.

Summary of Audience Discussion

Question: Do you think it is realistic to have agricultural education people across the states assigned to as high as 50 percent research?

Dr. Taylor: If you have two at 25 percent, you can get one at 50 percent. What I would do if I were making that choice is to assign one at 50 percent

research time and rotate it among the staff as a way of giving a person a significant amount of time to become immersed in a research area. This provides adequate time to lay out a plan and develop a program around which the faculty member can assemble graduate students. In my judgment that kind of investment will more likely attract outside funding from experimental stations and others than will two faculty each having 25 percent research time.

Question: Would you prefer to have one faculty member on full time research rather than two at 50 percent?

Dr. Taylor: Yes, if I was sure that the person really was a full time research professor. However, I might be tempted to go with two people at 50 percent. But ultimately we ought to have more people devoting a significant or major portion of their time to research.

Question: Yesterday Dr. Krebs said he strongly felt that each one of us needs to devote a certain amount of our time to research for our own development and to provide for the integration of research into our teaching and service courses. It seems to me you are in opposition to that. Can you see his rationale of how both of these can be tied together better?

Dr. Taylor: The rationale tends to represent a stereotype view of the university professor. That viewpoint is, that university professors are ideally renaissance type people who have one foot in scholarly inquiry and one foot in teaching. But I don't think that is the way to move a program. It is a worthy ideal for a university but I really think if you are going to make something happen you have to put some disproportionate resources around a few key people.

I think research is a state of mind. Some research can be done whether or not it is done on assigned time. Research can be done by individuals working with student teachers in the field. The teacher educators sees the questions and has an opportunity to routinely gather data. While the study may not be as significant or as extensive as that conducted by someone on 50 percent research time, it is still research. I'm not at odds with Dr. Krebs. I think he was stating the ideal. If I've got limited funds to invest I'm going to try to concentrate it where I can hold greater accountability.

Question: Do you ever get the feeling that we are too self centered for research? By self centered I mean that experiment stations don't particularly care about us doing research about vocational agriculture. They want us to do it in some other areas. Do you get any feedback from experimental station directors or others on this?

Dr. Taylor: Yes, this is a point I was trying to make with respect to tapping state vocational education research money in my presentation. You have got to help solve their problems. Over time you must help them identify their problems, hopefully through a data base such as program evaluation data, etc. Another point - you might want to consider some joint projects; maybe agricultural education and rural sociology could work in the area of occupational aspirations, awareness, career planning, isolation, lack of options, career options in rural areas, etc.

Question: Are you doing any work here at the center to show a model for joint efforts with vocational education and other fields in education?

Dr. Taylor: Our center staff is comprised of about one third from vocational education, one third from education and one third from other disciplines such as psychology, sociology, economics, etc. No we haven't shown a model and we should.

Question: To what extent can agricultural education tie into agribusiness for support in joint research?

Dr. Taylor: I think that some addressment to a state program of research in agricultural education that has a research advisory committee composed of people from agribusiness, the state office, and other disciplines like education, rural sociology, etc. could put together a long range plan that would stimulate additional support. For example, when I was a graduate student at Ohio State the state cooperative group funded some research in the Department of Agricultural Education. I think such funding is possible if you are dealing with the right problem. Let's look at reality - the current director of NIE put forth a new version of the Golden Rule, "Them that has the gold makes the rules."

How do you frame the things you want to do that would help you get where you want to go? Is the research you propose to do responsive to the needs of the funding agency or organization? Put your proposal in a problem solving, policy alternative mode. Some attempt to get a state program planned and to get something like an advisory committee in place would be some of the inducements that would spring money out of private enterprise.

Question: You mentioned that we need to go to the top in policy formulation and development. One of those tops you talked about was state departments of education and their policy towards research. You said we in agricultural education need to be there. How can we be there? What is the strategy?

Dr. Taylor: There would be several ways. It may well be logical for the American Association of Teacher Educators in Agriculture to have a committee look at R&D policy. The committee should request to meet with the executive committee of the National Association of State Experimental Station Directors to look at the constraints and the options and what it takes to systematically deal with them. The same strategy might be used with state directors. The question is, in your state would it be better to approach the state director as an individual service or would it be better to get together with others involved with research across the vocational education community and try to get some collective policy for research? But the first question they are going to ask is; What can you do to help me? Now one option would be to try to do your analysis beforehand - What are the problems and what could R&D do to impact upon these problems? Another option might be to impanel a planning committee such as an advisory committee. Obtain representation from the state department. Let them discover these problems with you. Try to pull together evaluative data and other evidence that would provide a logical rationale for identifying the real problems.

Question: What do you sense are the trends in attitudes in personnel in state departments of education for research? We in teacher education are in a sense middle men. We operate between the state department and the university. The university on one hand stresses research emphasis and scholarly effort and, on the other hand, the state department says do what needs to be done today. Do research if it will answer our problems in the next six weeks or by next year. I can see quite a difference and here we are in the middle. What's happening generally in state departments with reference to their appreciation for the type of research we are talking about?

Dr. Taylor: I don't see anything on the horizon that is going to make it better immediately. I think the long term hope is having people land in administrative posts that have completed the doctorate and hopefully have had a meaningful and positive experience in research. Another point is there is going to be a tremendous scramble in state departments to try to adjust to the new bill. Some of the implications of that are present - a willingness to develop some policy alternatives to do synthesis as a point of departure and putting in place a set of working relationships with those who might provide support for investigation.

One of the first things we as a center did was to sponsor a workshop for state directors on the administration of research. State directors have had a bunch of monkeys on their backs too. Their classical response is that by the time you give me the answer, I've either had to solve the problem or whatever. Maybe there is some hope by doing synthesis and trying to aggregate some data around current problems.

Question: Other groups are having some to say about our lein on vocational education; i.e., labor unions, NEA, and other groups. What should be our response? Should we offer them assistance and help? How should we react? It's going to come whether we like it or not.

Dr. Taylor: Well, in the short range it's going to be traumatic. In the long range it would probably be useful. Ultimately decisions in a democracy are out in the open and generally made with a pretty good examination of alternatives and inputs from a wide range. Vocational education has received increased funding and has become more significant through career education, more vocational career emphasis in postsecondary institutions, universities, and others. So there is a lot more interest in vocational education. Another point is all these other groups have budget constraints. They're looking for alternative ways to budget. We are going to have to get into the public policy arena and meet fact with fact, contention with contention, data with data and argue it out. We have to believe if that is done we'll all be better because of it. It's going to cause us to take a new approach as to how we develop legislation.

Universities have not been as active in the legislative process as they need to be. This matter of formulating a university counsel for vocational education made up of institutional membership from universities to try to develop a better presence, if you please, in the policy arena in vocational education is a good step. In other words it's kind of an intellectual watchdog

so that data which impact directly upon policy decisions are not ignored, that we do make better data base decisions, and we are more conscientiously generating data around the decision issues which we have to confront. One of the key things is what we elect to study - we've got such limited resources. If we don't spend time determining what we're going to put our efforts and time into then we don't have anything to lay on the table when these policy decisions come up. Another point - we can't avoid it; these other groups are going to have a voice.

* * * * * * * * * *

Performance-Based Teacher Education

Robert E. Norton
The Center for Vocational Education
The Ohio State University

A. Why PBTE/CBTE?
   1. Several factors stimulating movement:
      a. Stress on performance objectives
      b. Concern for accountability
      c. Desire to individualize instruction
      d. Widespread dissatisfaction with many current teacher education programs
   2. Tremendous need for personnel development in vocational education: Ohio experienced 240% growth in number of professional personnel 1968 to 1974
   3. Need exists for:
      a. More competent and effective vocational teachers
      b. Instruction based on identified and validated competencies
      c. Evaluation which is performance rather than knowledge oriented
      d. Instruction which provides for a variety of realistic learning experiences and options
      e. Instruction which provides immediate feedback to the learner
      f. Instruction which holds both the student and instructor accountable
      g. Instruction which is both efficient and effective

B. What is PBTE/CBTE?
   1. A new and alternative approach to teacher preparation
   2. PBTE/CBTE terms for all practical purposes are synonomous:
      a. Some prefer CBTE because it stresses the development of specific competencies
      b. Some prefer PBTE because it stresses the development of the teacher's ability to actually perform the specified competencies

C. Essential Elements and Desired Characteristics of PBTE Programs

Essential Elements

1. Competencies to be achieved are carefully identified, verified, and made public in advance
2. Criteria to be used in assessing achievement and the conditions under which achievement will be assessed, are explicitly stated and made public in advance
3. Assessment of competency takes the students' knowledge into account but depends upon actual performance as the primary source of evidence
4. The instructional program provides for the individual development and evaluation of each of the competencies specified
5. Students progress through the instructional program at their own rate by demonstrating the attainment of specified competencies

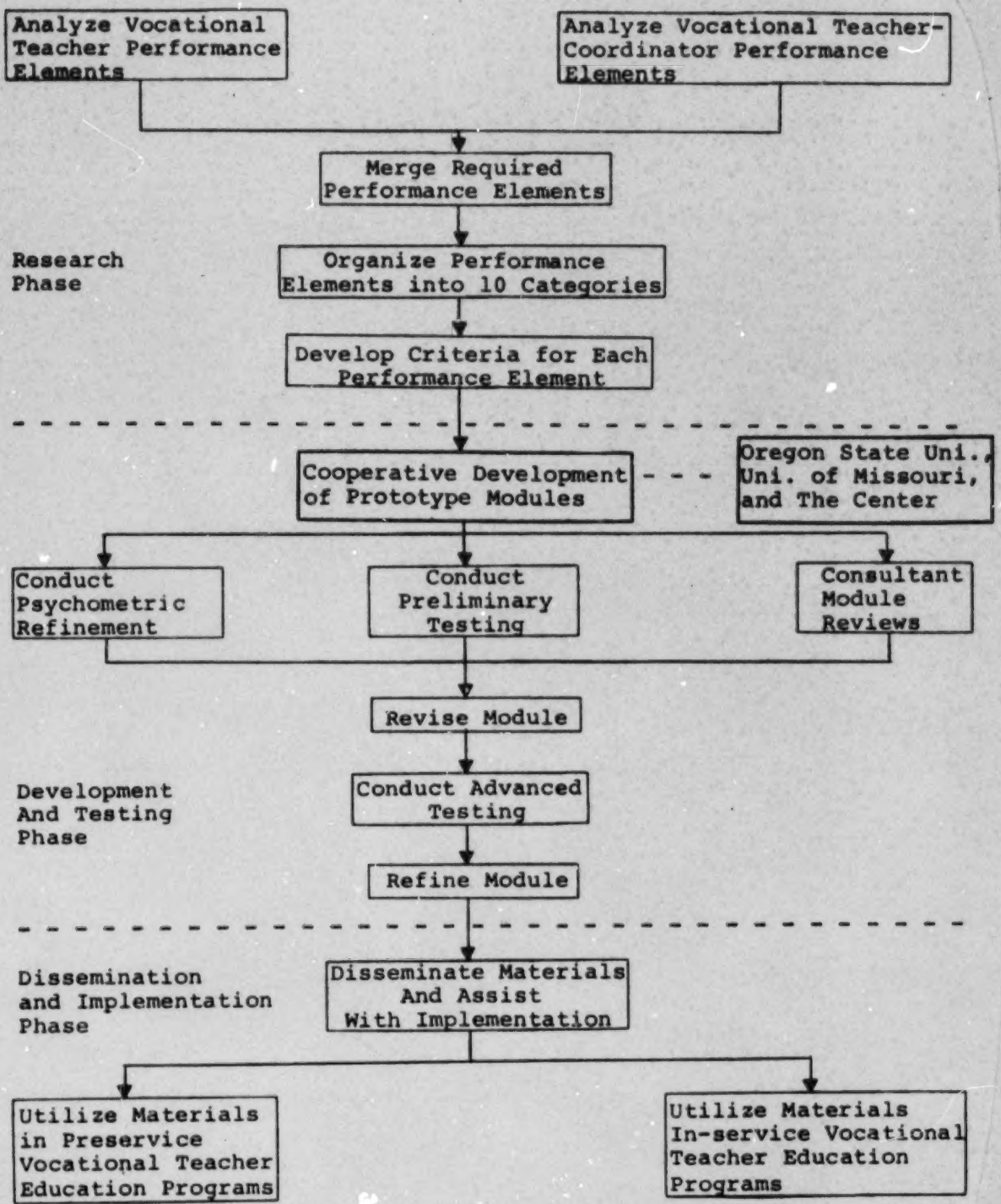
Desired Characteristics

1. Instruction is individualized to the maximum extent possible
2. Learning experiences are guided by immediate feedback
3. Emphasis is on meeting exit requirements
4. Instruction is individually paced rather than time-based
5. Instruction is to a considerable extent field-centered
6. Instruction is often modularized and uses materials with both required and optional learning activities--to achieve flexibility and provide for various learning styles
7. The program as a whole is carefully planned and systematic

D. The Center's PBVTE Curricula

1. CVE's efforts represent comprehensive program with three major phases: research, curricula development and testing, and dissemination and implementation (see Figure 1)
2. Research Phase--1967-1972 (see Figure 2):
   a. Analyze vocational teacher performance elements
   b. Analyze vocational teacher-coordinator performance elements
   c. Merge required performance elements - 384
   d. Organize performance elements into ten categories
   e. Develop criteria for each performance element
3. Curricula development and testing phase--1971 to present
   a. Cooperative development of prototype modules - 118
   b. Obtain feedback:
      1. Preliminary field testing
      2. Consultant module reviews
      3. Psychometric refinement
   c. Revise modules--rigorous 15 step process, 100 modules, see Figure 3 for Typical Instructional Sequence for CVE Modules
   d. Conduct advanced testing--15 sites including NIE, EPDA, Cost-Recovery sites
   e. Refine modules
4. Dissemination and implementation phase
   a. Develop supportive training materials:
      1. State-of-the-Art Report
      2. Student Guide
      3. Resource Person Guide
      4. Implementation Guide for Administrators

PERFORMANCE-BASED VOCATIONAL TEACHER EDUCATION CURRICULA


Analyze Vocational Teacher Performance Elements
Analyze Vocational Teacher-Coordinator Performance Elements
Merge Required Performance Elements
Research Phase
Organize Performance Elements into 10 Categories
Develop Criteria for Each Performance Element
Cooperative Development of Prototype Modules
Oregon State Uni., Uni. of Missouri, and The Center
Conduct Psychometric Refinement
Conduct Preliminary Testing
Consultant Module Reviews
Revise Module
Development And Testing Phase
Conduct Advanced Testing
Refine Module
Dissemination and Implementation Phase
Disseminate Materials And Assist With Implementation
Utilize Materials in Preservice Vocational Teacher Education Programs
Utilize Materials In-service Vocational Teacher Education Programs

THE CENTER FOR VOCATIONAL EDUCATION
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Figure 1

RESEARCH BASE FOR PERFORMANCE-BASED VOCATIONAL TEACHER EDUCATION CURRICULUM

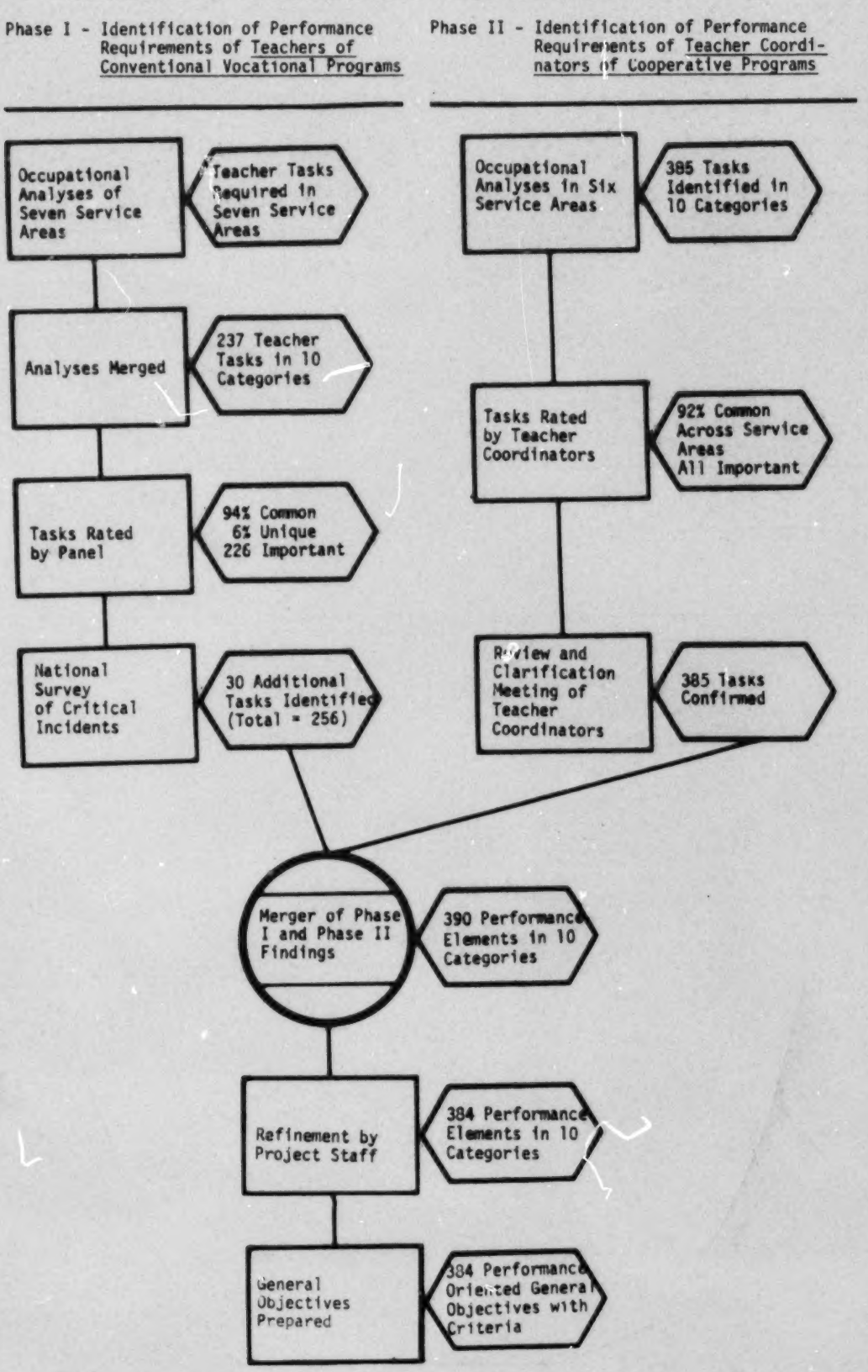
Phase I - Identification of Performance Requirements of Teachers of Conventional Vocational Programs
Phase II - Identification of Performance Requirements of Teacher Coordinators of Cooperative Programs
Occupational Analyses of Seven Service Areas
Teacher Tasks Required in Seven Service Areas
Analyses Merged
237 Teacher Tasks in 10 Categories
Tasks Rated by Panel
94% Common 6% Unique 226 Important
National Survey of Critical Incidents
30 Additional Tasks Identified (Total = 256)
Occupational Analyses in Six Service Areas
385 Tasks Identified in 10 Categories
Tasks Rated by Teacher Coordinators
92% Common Across Service Areas All Important
Review and Clarification Meeting of Teacher Coordinators
385 Tasks Confirmed
Merger of Phase I and Phase II Findings
390 Performance Elements in 10 Categories
Refinement by Project Staff
384 Performance Elements in 10 Categories
General Objectives Prepared
384 Performance Oriented General Objectives with Criteria

Figure 2

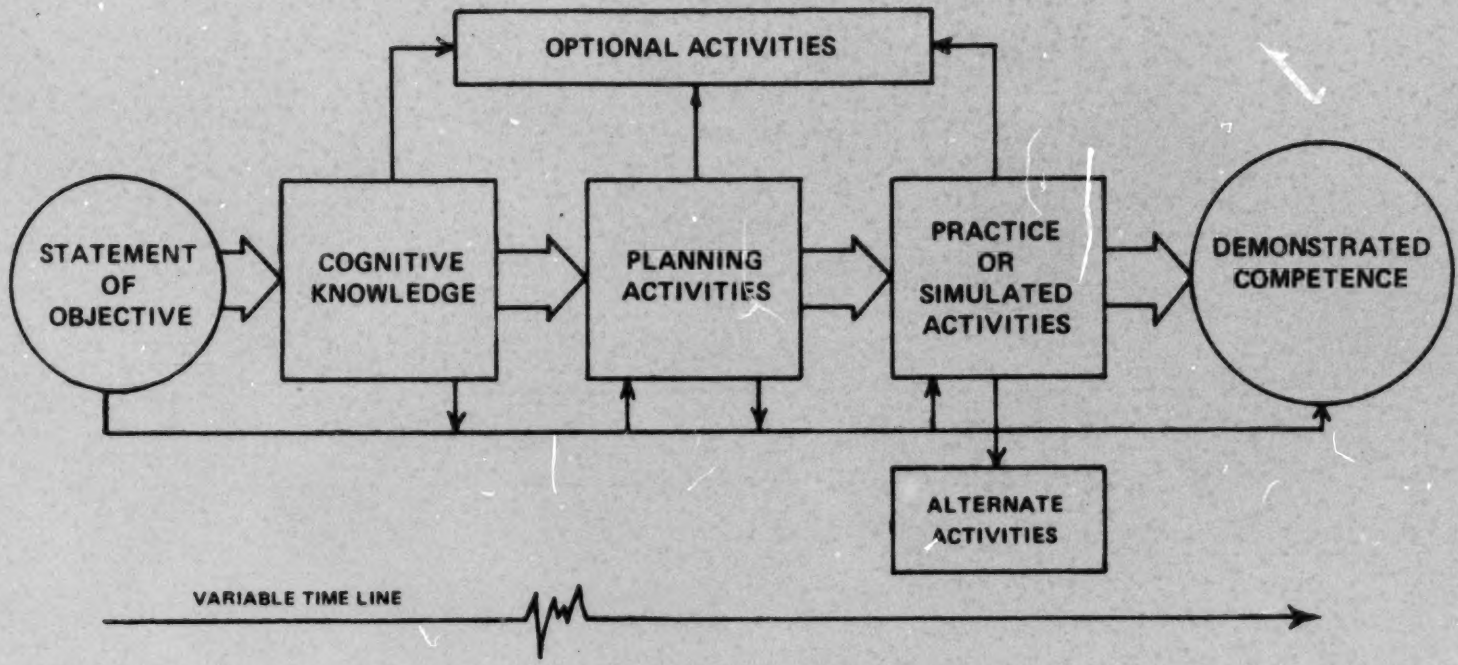

Figure 3

TYPICAL INSTRUCTIONAL SEQUENCE
FOR CVE MODULES

5. Slide/tape presentations
6. Training workshop modules

b. Publish materials
c. Train personnel
d. Assist with implementation of programs

E. Implementation Alternatives/Considerations
1. Blending approach
2. Course substitution
3. Idealized program
4. Alternate parallel program
5. Single service area program
6. Preservice program
7. In-service program
8. Combination preservice and in-service program

F. Summary
1. Major features of the Center's PBTE curricula
a. Each module focuses upon one or more verified important vocational teacher competencies
b. Modular design provides maximum flexibility for designing individualized programs based on needs
c. Design of learning experiences allows for individual small or large group instruction
d. All modules are suitable for preservice and/or in-service use
e. Most modules are self-contained
f. Recommended optional outside resources include printed and multi-media materials
g. Design permits adaptation through use of situation specific local materials
h. Each module culminates with evaluation of the specified competency in an actual teaching situation
2. Student and staff reactions overwhelmingly positive
3. A very promising alternative!

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The Development and Pilot Testing of Instruments and Procedures for Advisory Councils to Use in Evaluating Vocational Programs

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Advisory councils in most states are routinely called upon to evaluate vocational programs. However, in many instances advisory councils are given little direction and are often asked to evaluate those features of vocational programs about which they are least qualified to give advice. Furthermore, little is known about those features of vocational programs that advisory councils are best qualified to evaluate.

Recognizing that there is a need to improve the quality of advisory council involvement in the evaluation process, the Kentucky State Advisory Council for Vocational Education commissioned The Center for Vocational Education to develop an evaluation system that could be used to improve their vocational programs. This paper presents an overview of this project and a brief outline of the evaluation process.

The major objective of this study was to create, pilot test, and revise a set of instruments and procedures that could be used by advisory committees in evaluating vocational programs. Five major steps were followed in conducting this project:

1. Determine the major areas to be evaluated.
2. Develop preliminary instruments and guides for using them.
3. Review and revise the preliminary evaluation system.
4. Try out the instruments and guides in two regions of Kentucky.
5. Prepare a final version of the instruments and guides.

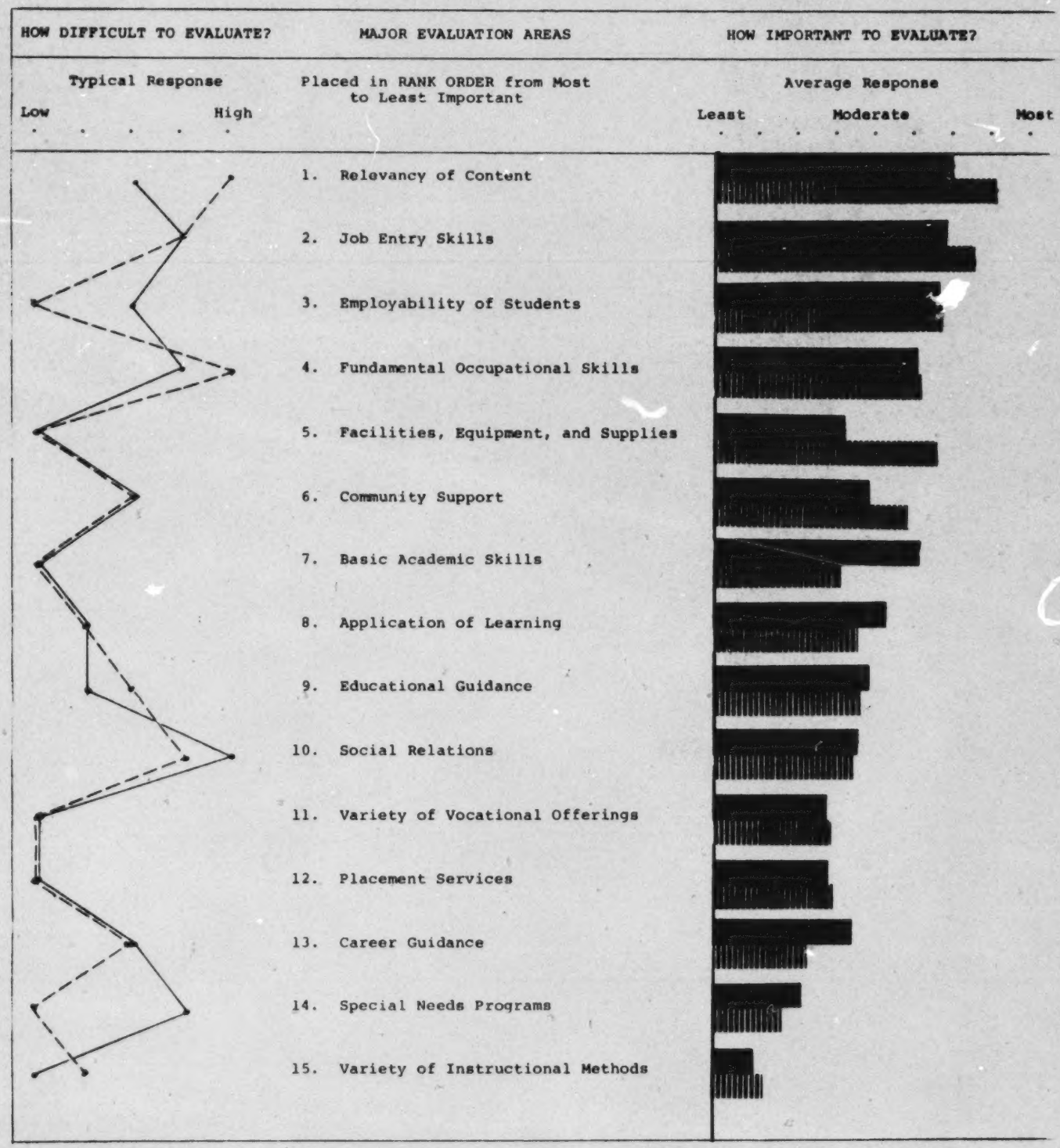
The remainder of this paper describes the activities completed in accomplishing each of the steps.

Determine the Major Areas to be Evaluated

The project staff developed a comprehensive list of questions that could be used to evaluate vocational programs. These questions were then reviewed with several members of the State Advisory Council for their reaction. During the review, it was recommended that the list be shortened and address only those areas that were not already being evaluated by other means, such as, the Southern Association or the Kentucky Department of Education. As a result, a shorter list of 15 major evaluation questions were developed. Over 80 vocational educators and advisory council members were asked to rate the difficulty and importance of evaluating these 15 questions. The results of their ratings are presented in Figure 1. As illustrated in Figure 1, the three most important areas for advisory committees to evaluate were:

Figure 1

Importance and Difficulty for Advisory Committees to Evaluate
15 Aspects of Kentucky's Vocational Programs


HOW DIFFICULT TO EVALUATE?
MAJOR EVALUATION AREAS
HOW IMPORTANT TO EVALUATE?
Typical Response
Low
High
Placed in RANK ORDER from Most to Least Important
Average Response
Least
Moderate
Most
1. Relevancy of Content
2. Job Entry Skills
3. Employability of Students
4. Fundamental Occupational Skills
5. Facilities, Equipment, and Supplies
6. Community Support
7. Basic Academic Skills
8. Application of Learning
9. Educational Guidance
10. Social Relations
11. Variety of Vocational Offerings
12. Placement Services
13. Career Guidance
14. Special Needs Programs
15. Variety of Instructional Methods
Advisory Council Members . . . 40 respondents . . . Advisory Council Members
Educators . . . 40 respondents . . . Educators

* The importance and difficulty of evaluating these fifteen aspects of Kentucky's Vocational Programs were rated by 80 State and Regional Advisory Committee Members and Educators at a joint meeting held in Lexington, Kentucky on October 23, 1975.

1. Relevance of Content. Does the content being taught in vocational courses reflect current practices and trends in industry?
2. Job Entry Skills. Do students leave the training program with the entry level occupational skills to perform the job for which they were trained?
3. Employability of Students. Are students able to find jobs in the skill area for which they were trained?

Develop Preliminary Instruments and Guides for Using Them

The three areas selected as being most important were then expanded into preliminary instruments. These instruments included sub-areas for each of the three major areas as well as specific questions related to each of the sub-areas. Preliminary guides for using these instruments were also prepared. These guides provided step by step procedures and related information for administering and conducting the evaluation process.

Review and Revise the Preliminary Materials

After the initial materials had been completed, they were reviewed by personnel from the State Advisory Council. Several suggestions on the length of instruments, time of administration, etc. were obtained. Based on these suggestions, the materials were revised and prepared for the field test.

Try Out the Instruments and Guides in Two Regions of Kentucky

Two regions (Region II and VII) were selected for the pilot testing of these instruments and guides. These two regions represented quite different areas--one being a metropolitan area and the other being a rural area. A total of three visits were made to each region. At the first visit, the materials were introduced and suggestions for final revision prior to the pilot test were obtained. At the second meeting, the five (5) craft committees were oriented to using the materials and the instruments and guides for the pilot test were distributed. The vocational programs that were involved in the pilot test included: distributive education, health careers, auto mechanics, nursing, practical nursing, business and office education, child care, and agribusiness. These programs were offered in local high schools, area vocational schools, and a state vocational school. At the third, and final meeting, the results of the evaluation and reactions to the evaluation instruments, guides and processes were obtained.

Prepare Final Instruments and Guides

Based upon the pilot test, the instruments and guides underwent a final revision. In this revision, every effort was made to incorporate the suggestions obtained during the pilot test. The final evaluation materials consisted of the following seven evaluation components:

1. Organizational manual
2. Guidelines for the State Advisory Committee
3. Procedures for the Regional Advisory Committee

4. Guidelines for the Regional Director of Vocational Education
5. Procedures for the Local Craft Committee
6. Guidelines for the Vocational Teacher
7. Interview Guide

The procedure followed in conducting this evaluation consisted of interviews with four different groups of vocational education constituencies: (1) students, (2) graduates, (3) vocational teachers, and (4) business and industry personnel. As a result of interviews with these constituencies, the advisory committee was charged with completing two short instruments. These were a Profile Form (Figure 2) and a Recommendations Form (Figure 3). The Profile Form provided a visual picture of the features of each local vocational program which most needed improvement. The Recommendations Form listed both the recommendations and commendations for each local program.

Each Regional Advisory Committee in Kentucky then summarized all of their programs in a Regional Profile (Figure 4). This summary reflected the areas representing greatest need in each district. Likewise, the recommendations and commendations were summarized for the region on a Regional Recommendation Form (Figure 5).

Finally, the State Advisory Council summarized the regional information. This summary indicated areas most needing improvement as well as recommendations and commendations. The information flow for this entire process is shown in Figure 6.

Kentucky Advisory Committee members at the regional and state levels responded very favorably to this entire process. They viewed the process as a very helpful and practical way to involve advisory committees in program evaluation. Those individuals who would like further information about the Kentucky Advisory Committee Evaluation System should write to the Executive Director, State Advisory Council for Vocational Education, 400 McClure Building, Corner Main and St. Clair, Frankfort, Kentucky 40601.

Summary of Audience Discussion

Question: Is anything available in the way of printed material?

Dr. McCaslin: Yes, the materials will be available through the Kentucky Advisory Committee in Frankfort.

Question: Do you feel the open ended questions, interviews, and profile ratings are better than checklists?

Dr. McCaslin: Much better, because the open ended feature requires more than just a "yes" or "no" response. We developed an interview guide to help the interviewers pursue responses and answers beyond the yes or no. We tried to keep the process as simple as possible yet obtain enough information to provide for program improvement.

Figure 2

PROGRAM PROFILE

PROGRAM:

SCHOOL:

Ranking of the Need for Improvement from 1 to 15		Evaluation Areas	Rating of the Need for Improvement: Low Need	Medium Need	High Need
	Relevance of Content	A. Occupational Exploration and Orientation			
		B. Relevance of Course Content to Current Job Practices			
		C. Up-to-Date Equipment			
		D. Relevance of Course Offerings to Job Opportunities Available			
	Job Entry Skills	E. On-the-Job Performance			
		F. Laboratory and Cooperative Work Experience Opportunities			
		G. Equal Educational Opportunities			
		H. Program Entry Requirements, Course Requirements, and Student Evaluation Procedures			
	Employability Skills	I. Locating Employment			
		J. Maintaining Employment			
		K. Interpersonal and Public Relations with Supervisors, Co-workers, and Customers			
		L. Work Habits and Attitudes			
		M. Personal Habits			
		N. Reading, Communication, and Math Skills			
		O. Continuing Career Development after Employment			

Figure 3

PROGRAM RECOMMENDATIONS

PROGRAM: SCHOOL:
Recommendations
Commendations

Figure 4

REGIONAL PROFILE

REGION _____

NUMBER OF PROGRAMS EVALUATED _____

Evaluation Areas (Placed in Rank Order from highest to lowest need)	Amount of Need for Improvement									Average Rating
	Low			Medium					High	
	1	2	3	4	5	6	7	8	9	
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										
13.										
14.										
15.										

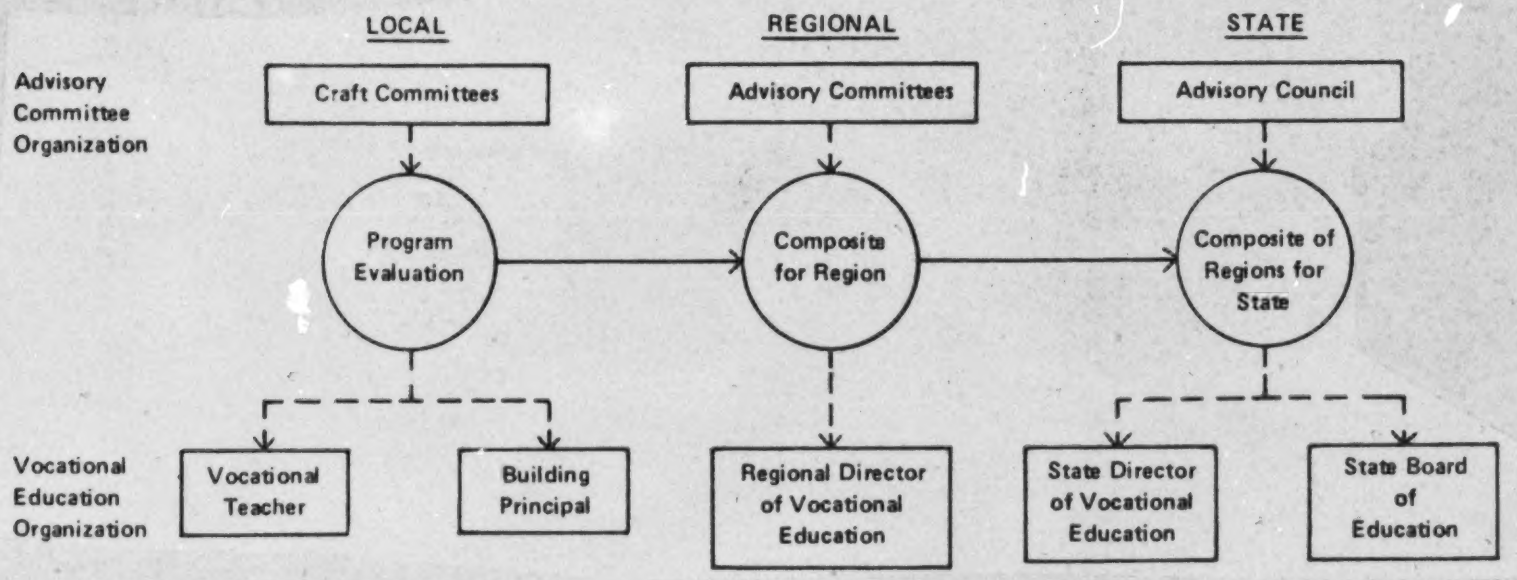
Figure 5

REGIONAL RECOMMENDATIONS

REGION_____ NUMBER OF PROGRAMS EVALUATED_____
Summary of Program Recommendations
Summary of Program Commendations
Regional Recommendations

Figure 6

INFORMATION FLOW



Question: Was this evaluation procedure designed for an overall advisory council for a vocational school, for an advisory committee or for an individual service such as vocational agriculture?

Dr. McCaslin: The evaluation procedures were designed for the individual service area or program. However, its design will allow you to add all programs in a school together to determine the effect of vocational education in the school. But let me emphasize the evaluation is done by service area and not by the school in general. The evaluation involves the teacher, the service area craft committee, the regional advisory committee, and the state advisory committee. The state advisory committee provides $1,000 to carry out the local evaluation.

What is important is that these questions and techniques are applicable to the evaluation of vocational agriculture programs in any state. These forms could be obtained from the Kentucky Advisory Committee for use by the local advisory committee. Too often forms provided by the state department or the North Central Association are used and they may not be very effective for use with the advisory committee.

Question: It seems there is tremendous involvement from the state and regional advisory committees in this evaluation process. With which committee is primary responsibility for evaluation placed?

Dr. McCaslin: In Kentucky the evaluation is initiated through the regional advisory committee. The regional committee delegates work out to the local craft or advisory committee. Therefore, most of the legwork is done by the local committee. However, evaluative data is pulled back together by the region. This helps to keep the region in a very influencial position.

It was fun to watch those local committees in action. Most were going away saying, "Here's something worthwhile and useful. Many times before we'd come in for the advisory committee meeting, eat, listen to a presentation and go home." They really seemed to like the involvement. In fact in one of the schools we saw some power being generated in that local committee which was going to be helpful in program modification.

* * * * * * * * * *

Curriculum Materials from National Defense Organizations

Wesley E. Budke
The Center for Vocational Education
The Ohio State University

This past year I have had the opportunity to work on a project to conceptualize and develop a system for making military technical training materials more accessible to civilian vocational technical educators.

The project was funded by the Curriculum Development Branch, U.S. Office of Education. As most of you know there has been encouragement to look around for educational materials which are already available and determine the adaptability of such materials. This is in part what prompted the U.S. Office of Education to further explore the possibilities of using military curriculum materials.

Military research and development has been a major contributor to the technological advances in our society. Research by or for the military has contributed much to commercial jet aviation and laser technology. From nuclear energy to freeze-dried convenience foods, our defense establishment is an important contributor to our technological advancement.

One military resource which is increasing in importance in the civilian sector is the military's highly developed technical training programs and curriculum materials. These military materials have the respect of both civilian educators-who use the programs when they are available-and employers-who are willing to hire qualified military trained workers. These situations have evolved along with improvement in the quality of the military's vocational and technical education materials. Militiary curricula are current, well-referenced and fully tested, and are systematically updated and evaluated. A comprehensive system to make military educational resources available to fill the current needs of civilian vocational education programs would greatly extend the value of these resources.

Recent projects sponsored by the U.S. Office of Education have demonstrated the quality of military educational curricula and the potential for satisfying civilian educational needs. Field tests have supported the practicality of adapting selected military courses to civilian educational programs. Areas of great potential are new and emerging occupational fields where civilian educational programs have not been developed. However, the problem remains that a system does not exist through which the nation's civilian vocational and technical educators have easy access to military-developed curriculum materials.

The Center for Vocational Education, at The Ohio State University, under a contract with the U.S. Office of Education, proposed a system designed which would provide military curriculum materials to civilian vocational and technical educators. This project included an analysis of existing educational information systems to determine whether any could be adapted in part or in total. Of the thirteen systems reviewed, AIM/ARM, AEF, CCC, NI, and RCU were used primarily by vocational and technical institutions and at least three of the five have disseminated military curriculum materials.

Although the dissemination of military curriculum materials was not the primary function of any of the systems reviewed, aspects of several of them can be incorporated into the design of the proposed system. A working arrangement with these existing informational systems may be of benefit to both the existing systems and the comprehensive system being proposed. A centralized system of this kind would increase the overall effectiveness of these existing systems.

Also, as a part of this contract a school survey was conducted, involving 175 educators who were using military-developed curriculum materials in 88 secondary and post-secondary, public and private schools. Data was collected from survey questionnaires and site interviews. The survey participants generally had military experience, used material in trade and industrial occupational areas and were from post-secondary institutions. Most of them selected and acquired materials developed primarily by the Air Force, Army and Navy; directly from the military service; and on the basis of low cost and inability to secure similar materials from other agencies. Their greatest problem in obtaining the material was inability to identify the source. They used printed material more than audiovisual or hardware and used the material primarily as a supplement or reference. The major requirements for a system were, that it provide a full description of the materials, supply portions of a course, and fill orders rapidly.

The most important factor in considering the need for an inclusive information system is the multitude of needs of the thousands of its potential users. To determine the current priorities for curriculum materials a survey was taken of two groups: state curriculum coordinators and deans of instruction of post-secondary institutions. According to these educators, the areas of greatest need for additional curriculum include: building and construction trades, engine mechanics, health, electronics, food service, machine shop, heating and air conditioning, drafting, and clerical occupations. All of these fields as well as a great number of lower priority courses are those in which the military has developed comprehensive vocational curriculum for training personnel.

To gain first-hand knowledge of the materials available from the military, and to determine the degree of access to them, approximately 100 military resident courses and 350 correspondence courses were collected. The first step in this process was to match titles of military materials with the titles of priority areas established by civilian educators. Following this match, criteria by which materials were to be collected were established. Appropriate plans of instruction, student and instructor guides and other course materials were requested and obtained from the military service, either by letter or by visits to military training bases. Factors considered in choosing materials included applicability to civilian education, the degree to which it was not reliant on specific military equipment and procedures, and the degree to which it was not reliant on commercially prepared materials.

During the project, The Center for Vocational Education has developed a comprehensive design for a centralized system to make military curriculum materials available to civilian vocational and technical educators. This proposed system is the result of a detailed analysis of existing information systems, the school survey, the extensive materials collection, visits to both civilian and military educational institutions, and the experience of the project's staff. The proposed system incorporates a number of characteristics as integral parts of its design. The system should be centralized to provide educators full access to military curriculum materials. It should have the capacity to provide materials, as well as announcing their availability. The curriculum materials should be available individually, although educators should

be made aware of the entire scope of materials on a requested subject. The system should be self-renewing, with continual updating with new and revised material. It should obtain feedback from its users, primarily vocational and technical teachers, to determine their degree of satisfaction with the materials obtained and their additional needs. And it should include input from business and industrial employers on emerging occupations. Finally, the system should take advantage of the reproduction and dissemination capabilities of other information systems so that they are complementary.

To fulfill these objectives, a system of four interrelated components is being proposed. These components are: acquisition and selection, materials preparation and referencing, duplication and distribution, and user services.

The purpose of the acquisition and selection component is to identify acquire, and select military curriculum materials. This process includes identification of military courses, acquisition of specific course materials and selection of materials applicable to civilian vocational and technical education programs. Operational procedures will be recommended for the transfer of military curriculum materials from the military branches to the system so that all appropriate new and revised course material is available for selection. Course material will be evaluated according to its adaptability to civilian education and according to the priorities for needed civilian materials.

The second major component of the proposed system is materials preparation and referencing. Its purpose is to classify and index acquired materials and prepare them for use by civilian vocational and technical educators. Because this component primarily deals with analysis of collected materials, it will be responsible for preparing catalog entries describing available materials. Other informational systems will be asked to cooperate in announcing available curriculum materials.

The duplication and distribution component will maintain the collection of all curriculum materials available through the system. It will receive orders, reproduce the material, prepare billings, distribute the requested curriculum materials, and maintain bookkeeping records. Both printed and audiovisual materials will be reproduced and distributed. Because this component is most directly providing the service requested by educators, it must be particularly geared for providing efficient interaction with vocational and technical educators. Factors to be considered include the ease and simplicity of ordering procedures. The speed and efficiency of filling orders, the cost of materials, and the reliability of delivery systems. Orders for material should be received either by mail or toll free telephone on simple requisition forms. Approximately ninety percent of all orders should be processed in less than two weeks at a cost competitive with that charged for commerical materials. To avoid duplication of effort and to take advantage of existing information systems, the duplication and distribution component will make referrals to the Aerospace Education Foundation, the U.S. Naval Institute, the National Audiovisual Center, and the Superintendent of Documents regarding materials available from these agencies.

The final major component of the proposed system is user services. This component provides for the overall interaction of the system with teachers and various facilitating groups such as curriculum specialists and state curriculum specialists and state curriculum coordinators. Linkages in every state with State Departments of Education, Curriculum Coordination Centers, Research Coordinating Units and professional associations will facilitate communication with the education community. This communication process includes an ongoing evaluation of the system through solicitation of feedback from its users. Feedback channels include user surveys and unsolicited user comments. During the first several years of the system operation the military curriculum materials will be field tested with civilian vocational and technical educators to determine the level of materials acceptability. An "Informational Search" section of the component will attempt to acquire for users those programs not included in cataloged material. The user services component could also provide technical assistance in the form of consultation and workshops on utilizing the system and military curriculum materials.

Implementation of this system should be gradual and systematic. The amount of time required for implementation is dependent upon the necessity to provide extensive awareness activities to acquaint civilian vocational and technical educators with the system and the need for additional studies of how educators will use available information before packaging and catalog format decisions are reached. Although a graduated implementation process will be necessary to take full advantage of the potential of the system, printed curriculum material will be available to educators within a short time of the inception of the system. Other activities which will be initiated during the first year include acquiring materials, making printed material available, developing and testing of a prototype catalog and procedures to have military materials made available to the system.

Several curriculum materials delivery systems will be field tested at the same time as acquaintance and familiarization activities are taking place. These tests and the reaction to the materials distributed will be used to evaluate the effectiveness of the delivery approaches. Modifications will be made as necessary. Also during this time a monitoring and screening procedure will be developed and implemented for new and revised curriculum materials. Workshops and consultant services will be made available to vocational and technical educators in assisting them to use the system and military curriculum materials. Audiovisual educational materials will be made available based upon the results of the field test. Because of the costs involved in reproducing these media, the results of feedback to the system and pilot programs will determine methods to be used for their distribution.

A minimum of five years should be allowed for full implementation. A staff of seven to eight persons will be adequate for implementation and operation of the system. In considering the required funding for implementation of the system it should be noted that all four major components of the system design are interrelated. Acquisition and selection, materials preparation and referencing, duplication and distribution, and user services are all necessary to delivering the curriculum materials to civilian educators. For this reason any reduction in financial resources should be

reflected by reductions in the level of effort by all four of the components. The first activities to be eliminated or reduced would be the distribution of audiovisual materials because of their expense to reproduce. This should be balanced against their effectiveness and wide-spread usage as educational tools. A second area of cutback could be in user workshops. Considered increases in the level of funding beyond that proposed could be reflected in additional studies of user needs, ensuring that the military course objectives correspond with civilian course objectives, or more extensive modification or adaptation of military curriculum materials for civilian use.

The implementation of this system would make available to the vocational and technical education community thousands of hours of curriculum which can be readily adopted or adapted to civilian use. Military curriculum materials have been developed under rigorous standards, are often criterion referenced and self-paced, use much of the latest educational technology, and are constantly updated. The civilian community can and should take advantage of this outstanding resource. Implementation of the system is an essential next step in accomplishing this goal.

(Editor's Note - After the slide-tape presentation, Dr. Budke proceeded with the following comments.)

I do want to mention three items that we found in working with military that have implications or value to teachers of vocational agriculture. One of the things that immediately caught our attention was that there were curriculum materials that could be appropriately used in vocational agriculture. For example, materials like welding courses, basic electricity courses, auto mechanics, landscape, and tropical agriculture could be used. I would say 80 percent of the military courses we looked at related to agriculture. Secondly, it might be advantageous for us to look at their correspondence courses which tend to be self contained, basic, and are being used by a number of states. Thirdly, you might look at the military's style of curriculum development and design capabilities. By and large we found that the military personnel talked with were extremely anxious to visit and talk with civilian educators. As civilian educators, we've known that the military has had some exceptional training programs, but we generally didn't know who to contact for them.

I don't know how many of you have had experience with military materials in civilian schools. If you have you know that there are some problems with the materials. But the problems need to be weighed against the potential. They have a lot of good information. They have made great use of task analysis. They've got good design and their materials are up to date.

With the advent of the Freedom of Information Act the military is to provide materials as indicated in the Act. However, it is still a problem to acquire the curriculum materials desired.

Summary of Audience Discussion

Question: Will these materials be incorporated into a clearinghouse here at the Center for Vocational Education?

Dr. Budke: It's possible. The way it now stands is that if the U.S.O.E. desires to implement the system, the project will be sent out on bid. We have looked at a number of other informational systems but found none that could effectively assume the responsibilities within their existing configurations. Some of the other systems could assist, for example: D and R might help in announcing the materials, the Curriculum Coordinating Networks might be able to assist because they already have direct contact with teachers and the National Audio Visual Center could serve as a linkage because they say they provide all of the audio visual materials from government agencies.

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Metric Education Instructional Materials for Vocational Agriculture

Joel H. Magisos
The Center for Vocational Education
The Ohio State University

The United States was the only industrialized nation which had not adopted SI metrics as its primary system of measurement. Congress finally acted in 1975 to implement a changeover and now there is a need for instructional materials which can be infused into existing vocational agriculture programs. Foreseeing this need, the Curriculum Development Branch in the USOE Bureau of Occupational and Adult Education funded the three year Metric Education Project at the Center for Vocational Education at The Ohio State University. The goal was to intercept this predictable need with an inservice education program and instructional materials for use in five vocational agriculture program areas and 72 other occupational preparation programs, in addition to adult basic education.

Major Project Tasks

The Metric Education Project has been engaged in several major tasks which contribute to the goal of the project:

1. Developing an annotated bibliography, now completed and available from the Center.
2. Developing a position paper, now completed and available from the Center.

3. Developing and testing instructional materials for 75 occupations, now under revision following recent field trials.
4. Planning and conducting inservice education to be held in early 1977.
5. Preparing an implementation guide for release with the materials at the end of the project.

The tasks are interrelated in many respects (Figure 1). It was necessary to find out what was going on in the field to begin assembly of the component parts for instructional packages. This work resulted in an annotated bibliography. As we became acquainted with the materials and people in the field we began to develop a position on metric education. The resultant position paper has contributed significantly to instructional package development and will help us with the inservice education plan and implementation guide. The inservice education plan and program will flow from the instructional materials and will provide the experience needed to prepare an implementation guide.

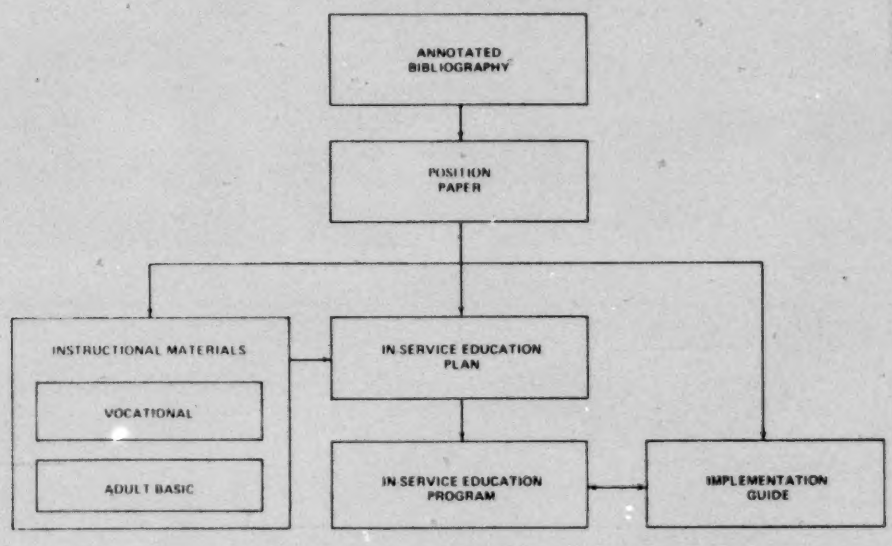

Figure 1 Metric Education Project Tasks

Developing an Annotated Bibliography

The project staff acquired and screened over 5,000 instructional and reference materials, 369 of which were annotated for inclusion in a bibliography. The bibliography is organized to permit access to the materials by type, occupational cluster, educational level, author, title, and producing agency. In addition, lists of suppliers, resource persons, and organizations are included.

Developing a Position Paper

The position paper deals with the issues and problems of implementing metric instruction in occupational and adult basic education programs in the United States. The paper includes sections on metrication issues, the metric system, vocational-technical curriculum, adult basic education curriculum, and instructional strategies.

Developing and Testing Instructional Materials

Instructional packages were developed for 77 occupations. Involved has been selecting occupations; developing objectives; deriving general and specific content; devising teaching and learning sequences; assembling or developing text, visuals, exercises, tests, and references; and producing the packages. Activities have been divided between project staff, teacher consultants, and production personnel. All instructional packages have been tested with teachers and students, and will be refined upon the basis of student test data, teacher recommendations, and expert judgment. In vocational agriculture, the occupational areas chosen were agricultural production, agricultural supplies and services, agricultural mechanics, horticulture, and forestry.

Planning and Conducting Inservice Education

A performance-based inservice education workshop program will be planned and conducted for vocational, technical and adult basic education program personnel in each of the USOE regions. Approximately 750 persons are expected to exhibit competency with the metric system and the instructional materials as a result of the 10 workshops.

Preparing an Implementation Guide

A guide is to be developed which will help state supervisory personnel, university teacher educators, local administrators, and instructional personnel implement instruction in metrics in local programs. Content for the guide will be based upon field trials with the instructional materials and tested in the inservice education program.

Project Schedule

The project schedule (Figure 2) extends over a three-year period beginning July 1, 1974. We completed the bibliography during the first six months and the position paper during the second six months. Concurrently, we were assessing possible instructional strategies, conceptualizing the instructional packages, and dealing with the inquiries attracted by a national project. We completed the field trials this spring and are now beginning revision. We had hoped that we could develop some "spin offs" of the project; for example, succeeding editions of the bibliography, a resource center, or additional instructional packages. Inflationary pressure on our three-year contract has been extraordinary, but we still have not ruled out the possibility and are seeking opportunities to fund additional packages.

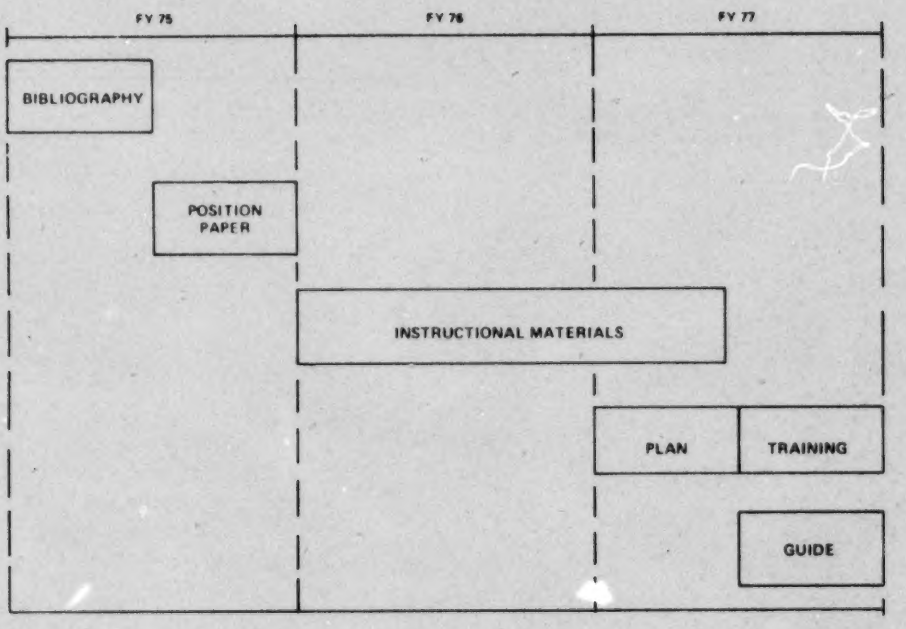

Figure 2 Metric Education Project Schedule

Instructional Package Development

The phases of instructional package development included the selection of occupational areas, the design of a prototype package, the development of individual packages, field trial, and revision and production (Figure 3).

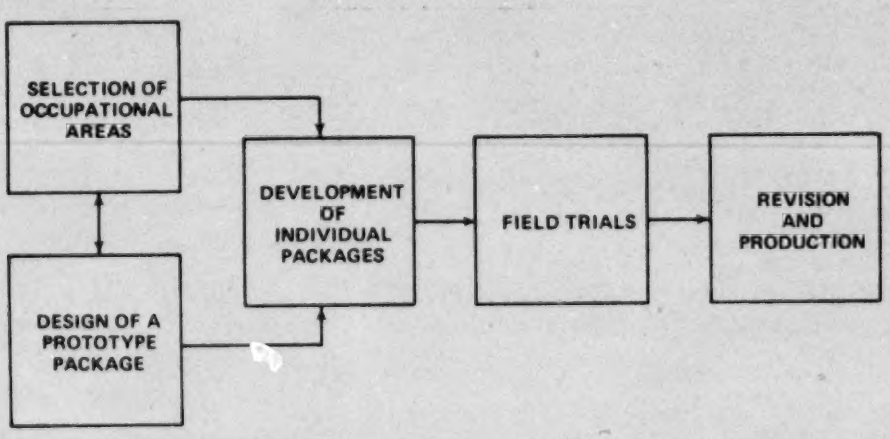

Figure 3 Instructional Package Development

Selection of Occupational Areas

Data was collected to use in deciding which occupations needed metric instructional packages. The occupations were chosen upon the basis of job opportunities, program enrollments, number of programs, and the amount of measurement used in the occupations. State plans and statistical reports were the sources of the data. Ranks were assigned to occupations within clusters based on criteria rating. A panel of experts reacted to the selections.

Design of a Prototype Instructional Package

A prototype instructional package was developed concurrent with selection of occupational areas. The prototype was for horticulture, incidentally. The prototype had elements which were common for all occupational areas and elements unique to specific occupational areas. The prototype was seen as a pattern to be used by teacher consultants in their work to develop unique elements of the individual packages for each occupation. The prototype was the basis for workflows later used to facilitate the work of project staff and teacher consultants in developing the unique elements of the individual packages.

The prototype demonstrated the necessary substantive content, teaching-learning process, and outcomes to be included in every package. For example, every package was to facilitate:

1. Recognition and use of metric terms, units and symbols unique to an occupational area
2. Recognition and use of metric relationships.
3. Recognition and use of metric instruments, tools, and devices unique to an occupational area
4. Recognition and use of metric and customary systems interchangeably.

Some general specifications guiding development of the prototype were:

1. That the instructional packages would be used as units to be infused into ongoing occupational education programs
2. That the units would apply metrics to the occupation, but deal primarily with metric knowledge and skills, not with basic mathematical measurement, or occupational knowledge and skills
3. That the packages would help students deal with the transition period of metric changeover.

Development of Individual Packages

It was believed that vocational teachers must be involved in the development of packages. Who else really knows the workings of vocational classes, is sensitive to vocational student needs, understands the kinds of learning experiences needed and can identify measurement skills relevant to the entry-level requirements of an occupational area? Consequently, ten vocational teacher consultants were engaged to develop the first draft of the packages.

We developed a set of simple workforms to facilitate identification of unique measurement tasks for an occupational area, development of student activities, design of visuals and tables, and formulation of test items. An intensive, two-day training program on metric and package development was constructed for the teachers. The aim was to involve the teachers in the curriculum development process, primarily to use their perspective as teachers.

Teacher consultants were able to develop unique elements quickly, using the prototype as an example. Individual packages were roughed out in as little as two days each. Teacher consultants interacted with project staff on the merits of the prototype design and made suggestions that were incorporated in the field trial production model.

The project staff managed the workflow and facilitated the teachers' work. As package elements were produced, they were assembled and edited. Teachers suggested reorganization of the prototype for the field version. It was decided that the field version should be produced in style and format planned for the final version.

Field Trial

Each instructional package was tried out in an actual occupational education program. For this phase, we worked through state departments of education in Massachusetts, Wisconsin, Alaska, Arizona, California, Oregon, Pennsylvania and Ohio. An inservice workshop was held for participating teachers in each of these states. Packages were tried in 290 classrooms.

Revision and Production

Data will be examined and revisions made in the final version. The final production version will be printed for use in 10 workshops.

Instructional Package Elements

Each metric instructional package includes a section on teaching and learning metrics; objectives and suggested teaching sequences for four occupational outcomes; textual information, tables, visuals, and exercises for each outcome; a test; and a list of references. The package is made up of both common and unique elements; for example, the section on teaching and learning metrics is common to all packages while the exercises are unique to each occupation. The packages will be in loose leaf form so that teachers may detach parts for use as overhead projection transparency masters or for student use.

1. The teaching and learning metric section encourages teachers to adapt the materials to preparing students for job performance. It explains the organization of the materials (Figure 4) and gives helpful suggestions for teaching the metric system and using the materials.

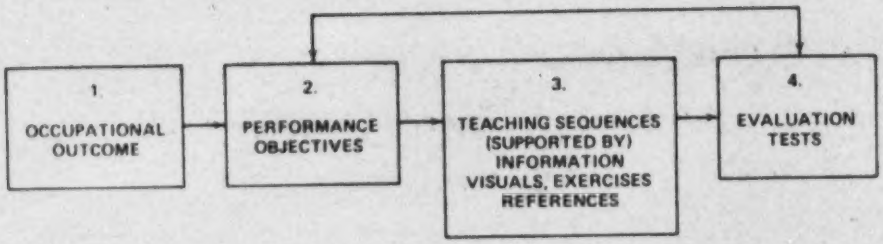

Figure 4 Instructional Strategy

2. Objectives are stated in terms of occupational outcomes (e.g., "The student will recognize and use metric units, terms, and symbols") and specific performance objectives (e.g., "Given a measurement task, select the appropriate metric unit"). The suggested teaching sequence is given in steps with specific elements in the instructional package.

3. The textual information is kept as brief as possible. It is intended as an aid to the teacher in identifying essential content and presenting it. After experience with the metric system, most teachers will use it as a refresher.

4. The tables are both common and unique to the packages. The metric units, symbols and referents selected for one table are useful in most packages. Metric units for use in each occupation vary and are developed separately for each package. The conversion tables are adapted for each package.

5. Overhead projection transparency masters were developed to illustrate the relationship of length, area, volume, capacity and mass; physical referents to temperature; and the relationship of prefixes and decimal values.

6. Exercise sheets in the instructional packages facilitate the assignment of "hands-on" practice with concepts and job skills. They are designed for duplication and independent activity. Most exercises are unique to the occupation. For example, land measurement, fertilizer application rates, and yield volume were used as exercises in the package for production agriculture. Students using the exercise sheets will get experience with applying metric concepts to job-related tasks.

7. Tests have been developed for use in the final version. They do not appear in the trial version of the package because they will be used to assess package effectiveness. Test items will test student performance called for in the objectives.

8. The reference sheet provides an annotated listing of publications, metric suppliers, and information sources.

Summary

The USOE-funded Metric Education Project at the Center has developed metric instructional packages for 77 occupations and three levels of adult basic education. Included are packages suitable for infusion into occupational programs for production agriculture, agricultural supplies and service, agricultural mechanics, horticulture, and forestry. When the packages are revised and produced in final version, inservice training opportunities will be available in each of the ten USOE regions. The bibliography, position paper, and implementation guide will serve as supplemental resources. The adult basic education materials, in addition to their primary use, may help with remediation of students lacking in mathematical and measurement skills.

As the materials become available, in 1977, it is hoped that teacher educators and state supervisors or consultants will help vocational agriculture teachers adopt these materials for local use. We believe that this will involve creating initial awareness and interest through teacher conferences and media, preservice and inservice preparation of teachers, and general legitimization of adoption by the state leadership. Inservice teachers can learn the basic metric system and be prepared to use the materials in less than eight hours. The teaching-learning unit can be incorporated in an existing course in six to ten hours.

The project staff is interested in any suggestions from the field. These can be used in package revision, inservice training, or the implementation guide.

Summary of Audience Discussion

Question: What has been happening in elementary education in metric education so that it will be an on-going program?

Dr. Magisos: It depends on the state. Some states have established a policy committee for metrics in elementary mathematics education. Some states have designated a metric consultant to help schools do this. A group of ten states have formed a consortium to get materials developed. Publishers are flooding the field with material but beware. Some of the materials we screened were inaccurate, took the wrong approach, were expensive or otherwise poorly done.

Question: Have you developed materials that are unique to various occupations?

Dr. Magisos: Yes, let me provide an example. We are going to have to deal with customary conversion. Clerks in agricultural supply houses will have customers asking for items in customary measurements and its on the shelf in metrics. We have some exercises which require a person to make

that conversion and deal with it on the sales slip. There is a sales slip in the package along with the metric conversion table and questions to guide the student in filling out the order. These are the types of things which will be found in the packets.

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Problems of the Profession Needing Attention

A Preliminary Report of a Study
Conducted for the
AVA Agricultural Education Division
Research Committee
By
William B. Richardson
Glen C. Shinn
Bob R. Stewart, Chairman

Presented by Bob R. Stewart

The AVA Agricultural Education Research Committee charged a sub committee with determining the perceptions of the profession concerning problems needing attention. The committee anticipated that the information would be helpful to those involved in planning and conducting research in agricultural education. The study was organized to focus on the perceived concerns of the profession as identified by supervisors, teachers, and teacher educators.

The specific objectives formulated for the study were as follows:

1. To determine the major professional concerns about agricultural education as perceived by supervisors, teachers, and teacher educators.
2. To determine if there was a difference in the perception of the concerns among the groups.
3. To determine if there was a difference in the perception of the profession among regions of the country.
4. To present a ranking of the major concerns identified and to further categorize the major components used to identify each concern.

A two phase procedure was followed in developing the data gathering instrument. Phase one involved a review of the literature from 1968 related to agricultural education. Included were research study reports as well as committee reports and papers presented at professional meetings. The information was organized into the following major areas:

1. Adult Education
2. Curriculum Development
3. Evaluation
4. Funding
5. Manpower Needs

6. Post Secondary Programs
7. Teacher Certification
8. Teacher Shortage
9. Urban Program Development

In addition, key components or concerns were identified and listed for each major area.

The second phase consisted of asking professionals in the Central Region to list their concerns about agricultural education. These responses were tabulated and composed with the listing of concerns identified from the literature review in phase one. All major areas previously identified were retained and two additional areas were identified. They were:

1. Administration
2. Curriculum Development for Specific Areas

In addition key components were added to the detailed lists prepared for each area of concern.

A questionnaire was then prepared which included a listing of the previously described 14 areas of concern followed by the listing of each area and the 93 components which were grouped by areas. The questionnaire was mailed to each head state supervisor, and teacher educator in the country as well as to the president of each of the state agricultural education teacher associations. Respondents were asked to rank the listings in each area based on their perceptions of the importance of the statements in the group. The data tabulated for this report was based on the response of 120 persons as indicated in Table 1. The return comprised a 67 percent response.

Cards were punched, and the data were analyzed at the Computer Center of the University of Missouri-Columbia. The mean value and standard deviation was computed for each item of the instrument. An analysis of variance was then computed for each item to determine if there was a significant difference in the responses among the three groups (teachers, supervisors, teacher educators) and among the four AATEA regions (Central, North Atlantic, Southern, Pacific). When the differences significant at the .05 level were found, Fishers LSD Method for Pairwise Mean Comparisons was used to isolate the source of the difference.

The initial phase of the instrument asked for a ranking of the major areas of concern identified for the study. Table 2 reports the rank order, mean value and standard deviation for these concerns. It is noted that the concerns of FFA and research were found to be significantly different among groups. Teachers differed from both supervisors and teacher educators in their perception of the ranking of concern about the FFA. When research was examined, it was found that teacher educators differed from both teachers and supervisors in the ranking of this concern.

Table 1
Response by Groups and Regions

Region	Groups: Supervisor	Teacher	Teacher Education	Total
Central	11	11	14	36
N. Atlantic	7	4	11	22
Southern	9	12	15	36
Western	13	4	9	26
TOTAL	40	31	49	120

Table 2
The Rank Order, Mean Value and Standard Deviation
of the Areas of Concerns of Ag. Educators

Area of Concern	Rank	Mean Value	Standard Deviation
Curriculum Development	1	4.59	3.77
Funding	2	4.98	3.77
Teacher Education	3	5.85	3.43
Teacher Shortage[1]	4	5.86	4.51
Evaluation	5	6.56	3.36
Teacher Certification	6	7.37	3.65
Supervision and Administration	7	7.76	3.18
Adult[1]	8	8.04	3.87
The FFA[1,2]	9	8.12	3.77
Manpower	10	8.21	3.81
Research[2]	11	9.22	3.55
Postsecondary Programs[3]	12	9.32	3.67
Urban Programs	13	9.35	4.20
Administration	14	10.03	3.31

N = 100
[1]Significant difference among regions at .05 level
[2]Significant difference among groups at .05 level
[3]Significant difference by interaction at .05 level

Two concerns also differed among regions. Adult education was ranked significantly different between the Central and Pacific regions, between the North Atlantic and Southern regions and between the Southern and Pacific regions.

Tables 3 through 8 were prepared to report the ranking of the items identified for each of the first five areas of concern identified and reported in Table 2.

The purpose of this paper has been to present a summary of the data collected which was related to the concerns of agricultural educators. It is presented as a basis for discussion and decision making for those involved in program planning and research in agricultural education. The comments of the panels and the conference participants should help to focus on direction for these areas as they are related to information presented in this report.

Table 3
The Rank Order, Mean Value, and Standard Deviation of Items for Program Curriculum Development

Item	Rank	Mean Value	Standard Deviation
Ag. Mechanics	1	3.10	1.82
Ag. Supplies & Services[1]	2	3.26	1.66
Ag. Production	3	3.53	2.33
Horticulture	4	3.85	1.61
Ag. Products	5	4.13	1.73
Ag. Resources[1]	6	4.46	1.81
Forestry	7	5.54	1.64

N = 112

[1]Significant difference among regions at .05 level

Table 4
The Rank Order, Mean Value, and Standard Deviation
Of Items for Curriculum Development

Item	Rank	Mean Value	Standard Deviation
Common Core of Basic Skills Instruction	1	2.91	1.96
Occupational and Task Analysis	2	3.67	1.80
Prerequisites[1]	3	3.82	2.18
Advisory Committees	4	3.89	2.14
Responsibility for[1]	5	4.33	1.68
Data Sources for	6	4.43	1.77
Curricula for Disadvantaged and/or Handicapped	7	4.74	1.87

N = 115

[1]Significant difference among groups at .05 level

Table 5
The Rank Order, Mean Value, and Standard Deviation
of Items for Funding

Item	Rank	Mean Value	Standard Deviation
Lack of Continuing Commitment of Vocational Funds	1	2.41	1.09
State Vocational Funds for Teacher Education	2	2.61	1.49
Application of Uniform Quantitative Standards	3	3.05	1.65
Funding by Proposal of Basic Teacher Education Functions	4	3.32	1.13
Lack of Teacher Educators Participation in Development of State Plans	5	3.64	1.36

N = 113

Table 6
The Rank Order, Mean Value and Standard Deviation of Items for Teacher Education

Item	Rank	Mean Value	Standard Deviation
Improving Preservice Programs	1	3.79	2.97
Identifying Competencies	2	5.16	2.62
Ag. Ed. Vs. Ed. Courses	3	5.57	3.32
Technical Ag. Required	4	5.75	3.23
Inservice Education	5	5.96	3.24
Teachers for Speciality Vs. Generalist Programs	6	6.38	3.06
Work Experience	7	6.49	3.30
Student Teaching	8	6.59	3.07
Participation Before Student Teaching	9	7.20	3.40
Teachers for Special Needs[1]	10	8.12	3.45
Utilization of Micro-Teaching	11	8.93	3.08
Standards for Graduate Students[2]	12	10.22	3.19
Teacher Aides	13	10.65	2.94

N = 81

[1]Significant difference among regions at .05 level

[2]Significant difference among groups at .05 level

Table 7
The Rank Order, Mean Value and Standard Deviation of Items on Teacher Shortage

Item	Rank	Mean Value	Standard Deviation
Improve Image of Vo-Ag	1	3.36	2.46
Recruitment of Students[1,2]	2	3.72	1.94
Present Situation[1]	3	4.12	2.41
Competency-Based Teacher Education	4	4.47	2.26
Associate Degree Transfer	5	5.22	2.28
Low Salaries[2]	6	5.34	2.70
FFA and Occupational Experience[1]	7	5.82	1.95
Training Industry People[1]	8	6.24	2.05
Credits for Experience	9	6.33	2.31

N = 101

[1]Significant difference among regions at .05 level

[2]Significant difference among groups at .05 level

Table 8
The Rank Order, Mean Value and Standard Deviation Deviation of Items for Evaluation

Item	Rank	Mean Value	Standard Deviation
SOEP	1	3.90	2.81
Course Content	2	4.34	2.70
Using Performance Objectives	3	5.09	3.08
Measuring Outcomes of Program Objectives	4	5.39	2.90
Evaluating Teaching Methods	5	5.67	2.71
Laboratories[1]	6	6.30	2.92
Utilizating Evaluation	7	6.47	2.59
Using Individualized Instruction	8	6.55	3.04
Follow-Up	9	6.96	3.51
Constructing Classroom Tests	10	7.35	2.86
Cost/Benefit Analysis	11	8.09	3.06

N = 92

[1]Significant difference among groups at .05 level

Implications for Program Planning and Research as Seen by the Panel of Reactors Representing Supervisors and Teachers

John Murray, NVATA President, Jackson, Minnesota

On behalf of the vo-ag teachers and NVATA, it gives me a great deal of pleasure to address you today.

My attempt from the teacher's point of view is to discuss items that I feel should be taken into consideration as we discuss, review, update and evaluate research in agricultural education.

Before putting my remarks together for this research conference, I visited with several vo-ag teachers to get their opinions and ideas as to what research is needed. I feel confident that the ideas and opinions expressed represents a view of a good cross section of the teachers.

Quite frankly, research is not the most popular subject to ask teachers about in that most feel it's something beyond them, or its difficult to understand, or it's not practical, etc. My suggestion to overcome much of this negativism regarding research, is that it be as relevant and practical in nature as possible. When summaries are published they should be easily understood by those not knowledgable about research. The reports for publication should be designed so that they can be used by news medias other than the Ag. Ed. Magazine, such as, newspapers, ag. teachers association newsletters, farm magazines, etc.

I have listed several items for your consideration regarding research and program planning in agricultural education. They are not necessarily in order or priority as I discuss them.

1. Need for constant evaluation and updating research of things we hold dear and sacred in ag. education such as:
   a. Does vo-ag benefit those students more that have access to the program than those who don't have the opportunity?
   b. Does FFA benefit more those students who had the opportunity to participate than those who did not have the same opportunity?
   c. Is the supervised occupational experience program necessary?
   d. Is the production ag and agri-business approach still the basic core of the program?
   e. Are year around programs important?
   f. Are there other ways to conduct teacher preparation than the traditional four year programs?

I am sure there are more things I could point out here. I happen to feel, the above mentioned parts of our vo-ag programs are important and must be retained.

The point I want to make is that research must constantly bear this out because from time to time we have several who question the things we hold sacred.

2. The need and procedures for conducting vo-ag programs in the large urban or metropolitan areas.
   a. This would include the inner city, suburbs
   b. How do we administer such programs because of the heterogenous group of students?
   c. Planning S.O.E. programs for the students
   d. Planning S.O.E. programs for seasonal occupations such as horticulture
   e. Planning facilities needed

3. Development of an effective research program for the vo-ag teacher working on advanced degrees.
   a. I feel they should be doing research on something that will benefit the teacher and instructional program rather than satisfying the needs of some research project that the agriculture education department must take care of.

4. Methods used in measuring relevancy of teaching units.
   a. How do you do it?
   b. How do you determine what should be taught?
   c. Priority needed - an example would be farm management. I would guess this area to be one of the weakest parts of instructional program in most high schools. With the National FFA Farm Management contest, hopefully more attention will be given to farm management.
   d. Are the objectives of the contest relevant?
   e. How can research help?

5. Practical research for supervised occupational exeprience programs.
   a. Importance of and what should they consist of for the students in production ag., agri-business, specialized areas such as horticulture or farm mechanics
   b. How does the staff handle S.O.E. in the large chapters, as well as the visits that should take place?
   c. Are S.O.E. instructional periods top priority during the summer months?

6. Determine the need for adult, young farmer and postsecondary teacher preparation.
   a. I observe strong commitment in some states and very little to none in others
   b. We need a stronger commitment by teacher education for preparation and upgrading of vo-ag teachers in these areas
   c. Does research bear out the importance of adult and young farmer education?

d. Postsecondary ag. programs are numerous in our community colleges, vo-tech institutes and junior colleges. Does research bear out the pre and inservice needs needed by these teachers, S.O.E. programs and placement for students, new programs that are needed, and evaluation and updating of present programs?

7. Evaluate the needs of FFA and postsecondary youth organization
   a. Is teacher commitment to the FFA lessening?
   b. Are all of the awards and activities important? We always add more and very seldom drop any. I am sure a good research project would be in order to examine participation and value of the entire activity and awards program.
   c. How do we measure whether a teacher is competent to administer an FFA chapter and be knowledgable of all awards and activities?
   d. How is the FFA program best administered in multi-district chapters?
   e. What will be the impact of junior FFAs that are emerging in several states?
   f. Will those that start in FFA at 6 or 7 grade be strong or weaker members in their 11 and 12 grade years?
   g. What should the inner city and urban FFA chapter consist of with regard to activities and awards?
   h. What should the youth organization for our postsecondary ag. programs consist of?
   i. What is the role of the FFA alumni chapter and how can it be better utilized?

8. Development of an effective legislation program for agriculture education.
   a. Methods of seeking good legislation
   b. The grassroots influence is most important
   d. Future legislation is stressing the need for more accountability of programs
   e. Funding services for adult ed. at local levels
   f. Funding for vo-ag secondary programs - one school district compared to multi-district programs

9. The need for and procedures used in utilizing effective advisory committees for vo-ag departments.
   a. Advisory committees in many cases are organized as a last ditch effort to save a program. Should be well organized and used frequently to update and evaluate to determine if the vo-ag program is best meeting the needs of those it is intended for.

10. The need and procedures for articulation within the levels of instruction of vo-ag programs, secondary, postsecondary and adult.
   a. One of the most neglected considerations in agriculture education
   b. If we believe we have a commitment to all ages who desire agriculture education, then we need to provide a good plan of articulation

11. Methods used by vo-ag teachers to provide training to the slow learner and disadvantaged student.
    a. All programs have these students. Is it the responsibility of the teacher to provide the necessary training?

12. Evaluation and need of standards for quality programs in agricultural education.
    a. What role will research play in keeping with quality standards?
    b. What will be the effect of National Seminar on Standards and the suggested standards that will come forth as a result of it?

13. Determine the priorities of the vo-ag teacher as an individual in relation to those priorities of the job of teaching vo-ag.
    a. Are the priorities changing? i.e., has the young teacher and his relationship to time involved, to the FFA, toward community service, FFA alumni, etc. changed?

14. Determine why teachers stay on as vo-ag teachers.
    a. Why does industry hire ag. teachers?

15. Determine the professional needs of the vo-ag teacher.
    a. The relationship with NVATA, state vo-ag teacher associations, state vocational associations, and the AVA
    b. Are the needs being met?
    c. What will be the effect of teacher bargaining laws?
    d. Why don't teachers join their vo-ag teacher association, the state vocational associations and the AVA?

16. Evaluation of experience needed by teacher educators and state staff for the training of prospective vo-ag teachers.

17. Evaluate why we have teacher shortages and determine what can be done to improve the situation.
    a. Would a public relations program be helpful?
    b. What is the image of vocational agriculture?

In conclusion, my purpose was to bring to the surface considerations and concerns from the teacher's point of view regarding research in agriculture education. My attempt was to offer constructive criticism rather than critical.

I do have one suggestion. As the agriculture education staffs, universities and colleges develop their long range plans for research, it is my hope you involve key vo-ag teachers from your state in an advisory capacity for inputs and suggestions for future research projects. I am sure they would be very willing and equally helpful.

I am confident that this research conference has been most productive and as a result we all will put forth a greater commitment to program planning and research in the future. Program imporvement is dependent on high quality research.

Kirby Barrick, State Supervision, Ohio

I have jotted down just a few brief comments. Are we concerned about the same old things we have been concerned about for a number of years? In the fifteen years that I have been associated in some capacity with vocational agriculture, I've heard the same thing again and again.

Table 4 seems to point up one comment that I would like to make. Are our priorities what we feel need to be done or are they prioritized by what we are doing? In representing Ohio I can say we are involved in common core basic skills instruction, occupational task analysis - these types of things. We aren't doing too much in terms of curriculum for disadvantaged and/or handicapped students. Because of our thrust statewide in these types of programs maybe if we would reverse this list, as Dr. Crawford suggested, we might be a little closer on target. In Table 6, the teachers for special needs item under teacher education ranked tenth. But those of us who work in classrooms day after day see that not all the students are average or above. Many are students with physical handicaps, neurological handicaps and sociological handicaps. We need to help our teachers deal more effectively with these types of students because they are there.

Another item I would like to address dealt with Table 5 which was concerned with funding. Again this is something that comes up day in and day out. I see item one, a lack of continuing commitment of vocational funds, more as a challenge than as a problem or difficulty. I really think that if we had a budget for every ten years instead of every two, that in the eight middle years we might forget about proving what is right and continue to improve vocational education in Ohio. As it is, every time we have a new legislature, every time we have to fight for line items in the budget, we get down to the nitty gritty of proving what we are doing is in the best interest of the students in public education in Ohio. I really don't think that hurts us too much. In fact, we could do that a little bit more. Someone once said that selling programs is 90 percent selling and 10 percent demand. I guess after working a couple of years with Jim Dougan I've found that that is true. We need to show people that we do need funding for our programs rather than tell them that we need funding for our programs.

Standards should be treated the same way. If we need standards let's prove why we need them and if we don't, then it no longer is a concern.

The other item that I would like to address would be the teacher shortage which relates to Table 7. That was a problem fifteen years ago when I was a student in vocational agriculture. There were never enough teachers. We only had production agriculture in Ohio at that time. Since then we have added seven non-production taxonomies or major instructional areas. This has certainly compounded the problem rather than solved anything. I would like to emphasize that in Table 7, improving the image of vo-ag, it does say "vo-ag" and not the FFA. I see so many times all PR and image related activities deal with FFA. Improving the image of vo-ag would improve the teacher situation as we show people we're doing a good job and it is a viable program. Hopefully, we would have more people who were not intending to go to college or

were planning on going into other programs in agriculture and non agriculture in college wooed into agricultural education programs. Also, the recruitment of students is a good idea. Dr. Boucher does a great deal of work at Ohio State with that. However, if Ohio State were to recruit double the students in agricultural education this fall, it would be four years before we have double graduates.

I think that there are a couple of items on the list that we should address ourselves to because they are quicker solutions to a definite problem in vocational education. Those items are five and eight, associate degree transfers and training industry people. Students in associate degree programs are picking up technical agriculture and all they need is the professional education to go with that. In a few hours we could have some of those graduates equipped with one year certificates in vocational agriculture. Dr. Gliem and Dr. Newcomb have been involved with the training of industry people to teach vocational agriculture in Ohio. This seems to be a quick answer and in many cases a very good answer to the teacher shortage problem. In summary, I would hope that we would look at new challenges, new solutions to problems, and new concerns rather than just reiterating among ourselves time and time again what the problems are and that there might not be any answer at all.

James E. Dougan, Director, Ohio Agriculture Education Service

Let me say that our success in Ohio has been a team effort with vocational education. We get a lot more done for agricultural education because of our partnership with vocational education.

I felt good that curriculum development in Table 2 ranked first. Our first priority in Ohio is to make sure that we have a course of study which will prepare students for today's occupations in agriculture. In ten years, I hope curriculum development will still be our first priority because we need to review, revise and improve it. I think there is no question about it, the course of study emphasis is going to reflect in much better programs at the local level.

Is funding really a problem? Has any state really run into great difficulty getting funds for programs when people have identified who they wanted to serve, how many, by when and then said what it was going to cost? I don't know of any. We can predict there will be a lot less funding for education from Washington in the future. The federal funds are drying up because of the fact that there are so many social and economic programs that what has been coming to the universities and secondary schools is going to be diminished. So we have got to become fiscal people and locate other funding sources.

People have heard me say many times, "Give me a secretary and I'll administer this program in Ohio. But if you want leadership, I've got to have people." That's what we sell state staffs on. You must have people to provide leadership, innovations, to move things, to extend and expand. It makes me shudder to think that there's a state in which no

occupational experience program is demanded and only 36 to 38 percent of the vo-ag students are FFA members. I wouldn't doubt that funding may stop in that state because the program has gotten out of hand. There are other examples - one state has a big 7th and 8th grade program. It may lose some finding for the 11th and 12th grade vo-ag program. In another state, they are taking all the money away from agricultural education and giving it to adult education. With people in state leadership we can have quality in-depth programs.

We in the profession said the image of vo-ag was a top problem relating to the teacher shortage. If that is the case then we had better correct it. A poor image also affects funding. We have got a lot of line itmes in our budget now that are not funded for vocational education in this state. I think the problem is that people don't know about the good work that is being done in vo-ag. You have to work at that all of the time.

Our leglislative breakfast fills an important public information need. This breakfast is for all legislative leaders. We don't keep them long but we get across to them pretty quickly what we're doing in agricultural education. The local FFA chapter contacts the legislator for that area. The teacher and FFA members eat breakfast with their representative and then have their picture taken together. This has had a big impact. Later when something comes up in the General Assembly dealing with agricultural education, the legislators don't say, "Agricultural education - what's that?"

In relation to 12 month programs, we have attacked this too much on the basis of a job for a teacher. Instead, we have got to define those essential tasks which can be performed only during the summer. Once we have those tasks identified we have to provide instruction. Students in Ohio are coming in for class on Mondays. Some come in every day. It is required that the teacher follow up the students.

Someone mentioned that 80 to 90 percent of the best vo-ag teachers graduating from Cornell are transfers from New York's two year postsecondary programs. A group of superintendents, largely from joint vocational schools, told me we are trying to train teachers with a year's work experience and that they are not technically competent to teach. Some agbusiness leaders told us the agbusiness programs are not as successful as they could be because we took production ag. teachers, brought them in for a three week workshop and started them out teaching an agbusiness course. These leaders said they won't support the program until we get teachers who have had some experience in the agbusiness field. The point is - prospective teachers must be better prepared technically and need occupational experience in the field taught.

Why should you recruit more teachers? You have trained twice as many people as go into teaching. You have given them an expensive union card and they are not going into the profession. Why don't you find out why they are not going into teaching? You can't stay alive by placing only 33 percent of your graduates into the job for which they have been trained. You won't get funds even from your college office. You are trying to be all things to all people.

Another thing you need to research is training vo-ag teachers and extension personnel in the same track. If Roy Kottman and I couldn't relate in about two minutes the differing roles of the extension agents and the vo-ag teachers, we wouldn't get nearly the funding from our legislature that we now receive. They are not duplicate efforts. The extension agent today can call on a group of specialists so he has become a coordinator. A teacher won't last a year as a coordinator. He has got to disseminate - he's got to know the information. Where did we ever get the idea that we could could train for these two types of jobs in exactly the same way and be successful?

We need to study effective patterns of supervision. I haven't seen a good supervision study made in years. There has to be better ways than the way we're doing it. State standards and criteria as an indicator of quality programs - do they really bring about quality programs? Another thing we ought to study is effective leadership roles of state staff. We talk a lot about leadership and management. What roles are really effective?

Something else we are going to have to look at is accountability: not just cost benefits. There have been some studies in agricultural education that have been misleading. Too many times research tells the researcher what he wants to hear. Someone from the outside can look at it and tell that there is a personal thing in it. The experts tell us that a cost analysis study which is not based on student contact hours of instruction isn't realistic. We know that in Ohio last year it cost $996 for a regular student in high school and about $1,500 per student in the joint vocational school program. But we've got them four and one-half hours a day in the joint vocational school program.

Implications for Program Planning and Research as Seen by the Panel of Reactors Representing Teacher Educators

Paul Marvin, University of Minnesota

For want of a better term, I am going to put my concerns in domains. It seems to me we have been primarily dealing with the instructional domain. Let's leave that area. I want to start with the statutory domain. We are no longer mentioned in the statutes. Since we are not mentioned in the federal legislation when the statutes come down to the states, it is highly likely that agricultural education will not be written into state legislation unless we act. I know Jim Dougan says we have to work with all of vocational education and I agree. But I feel it is necessary that ag. ed. be mentioned.

It is interesting that our support base in the last ten years has been weakened. That has not happened to agricultural extension's support base. It has not happened to the Farmers Home Administration. Another example of our weakening support is the Ohio Center. The Center for Vocational Education used to be an agricultural education research center but now the

visibility of agricultural education at the center is very peripheral. The problem which I think can be research is in the statutory domain. There are some answers that we need to look at in this area which will never be identified in a graduate study.

We in agricultural education have lost the leadership role. Agricultural education originated the idea of cooperative education. Now unfortunately most of the regulations pertaining the coop programs don't fit the needs of ag. ed. well, at least in our state. What I am saying is what are we going to do with R&D funds? Those are exemplary funds. What can we do to gain this back? We need to exercise our muscle in this area.

Another domain called manpower has been mentioned. There are some researchable areas here. What is our role? Where do we fit? What should we be doing? As we fit the rural scene, are we taking on some things that really don't belong to us? What are the manpower demands as they relate to agricultural education? I think we ought to draw a string around our area and zero in with some research on it.

Management is another domain with which we should be concerned. The productivity of the industrial sector has certainly improved as it has in the service areas. Agriculture cuts across both of these areas. The farmer buys products and services for his business. It seems to me that one of our roles in education is to teach him the consequences of his choices. We have done some of this in Minnesota. Industry has indicated that we need to teach production agriculture people more about the industry aspects of agriculture.

How are we going to solve these problems? We're not going to solve them with graduate theses. We need longitudinal studies. As Ben Bristol mentioned, they are costly and generally they don't recognize any one individual. The farm management work we have done in Minnesota has been longitudinal. Another problem is you have to track the same people over quite a period of time. This means you have to tool up differently for this type of study. I haven't seen any Part C studies in agriculture that have amounted to very many dollars. As was mentioned yesterday by Dr. Taylor we need to get to the top level of policy formulation so we can get the kind of funding required to look at some of the problems we have identified.

Teacher education has to have strong support from the state agency. Otherwise you have to go year to year with small grants. If we didn't have the strong agency support we have had in Minnesota we would never have been able to do the longitudinal studies in adult education.

Harry Gardner, Michigan State University

There is purpose in rating our areas of concern. In contrast to many other educational groups, we in agricultural education are relatively current. We still have a lag but it is our professional responsibility to identify new areas for research and development to stay ahead of the legislature and remain accountable. I think we have to explain what is happening and why we are engaged in the kind of research we are doing.

I think we are doing quite a bit in some of the areas mentioned such as competency based programs and curriculum. One area that I feel needs to be researched, although we are starting to tap it, is the affective domain. This whole area of leadership is sold through the FFA. We need some hard data about leadership, character development and the kinds of behavior young people exhibit because of their involvement in youth organizations.

We said we are concerned about the teacher shortage, teacher recruitment and our image. We ought to ask what is the vo-ag teacher's attitude toward leadership skill development? Do we really know how strongly the teacher feels about his effectiveness as a vo-ag teacher and what his attitude is toward his job? If the teacher does not have a positive attitude, students will not identify with him and he will have very little impact on their behavior. Perhaps we could use the method the Purdue University faculty used to provide the knowledge and experience so positive attitudes would result.

I think a greater number of us are becoming involved in career education at the middle school or at the ninth grade level in our programming. We are beginning to see support in funds at the local level. Not many people are doing any pre-testing. I think we ought to answer some questions such as - Are the youngsters going through the career education program going to sell the program? Are they going to help us create the positive image we want towards vocational agriculture? Is there a way to design the pre-vocational agriculture program so they will identify with the program? Will these students be better prepared for initial employment? Are they going to be less mobile? Will they do less job hopping and job jumping? Will they make better vo-ag teachers? I think we have a golden opportunity to collect some data and find out whether there are any changes of behavior when the pre vo-ag career education student is compared to those who have not had the early program. People who control the funds want and need these kinds of data.

I think we also have to ask these questions - What is the image of agriculture? Farming? Vocational agriculture? FFA? Vocational agriculture teachers? In Michigan, we have been invited to work with a number of schools that have never had a vo-ag program. Now Michigan is an industrial state, an agricultural state, a tourist state. If I approach the superintendent, assistant superintendent, curriculum director, or principal and say, we want to find out what interest your students may have in <u>agriculture and natural resources</u>, it's like turning a switch off. But if we say we want to find out if your youngsters have any interest or needs in <u>natural resources and agricultural education</u> we get a completely different response. This situation provides further evidence that there is an image problem.

We have to ask ourselves why young teachers are leaving the profession or what keeps them in it? I think we should become very basic. Last night I sat at a table with several young men. One young man told me he became disenchanted during student teaching. He was to teach a lesson on cattle nutrition but found only two students in the class had cattle projects. One question is - Are supervised farming projects really significant in every school situation? Is there any substitute? Can a gardening project substitute?

In Michigan the traditional vo-ag programs have a lot of status and the students want these programs but they don't have the opportunity for project ownership.

These are some of the areas I feel need to be researched.

Roy Dillon, University of Nebraska

I started my remarks yesterday morning as I listened to Al Krebs. I thought about how you and I would be viewing ourselves as we leave this conference. We are in a pretty crucial role because we are the scientists in our field. We are responsible for developing a preservice program to help prospective teachers learn to know teaching vocational agriculture as it is. This means you and I must know how it is or how it is emerging.

You and I have the responsibility for providing the leadership and being out on the cutting edge. That makes me feel pretty helpful because I know we have the responsibility for making some pretty important decisions. Those decisions are: What will be researched? How will I use my energy, my talent individually or collectively? I as a teacher educator work daily with teachers and state supervisors. As we have heard this morning, they have their desires and needs. The knowledge that we impart, particularly in a preservice program, had better have a pretty solid base.

Our brother scientists in the agricultural experimental stations don't say much about their recommendations until they have had two or three or more replications. We in ag. ed. find ourselves in an arena where answers are wanted quicker than our brother scientists are willing to give them. Perhaps we should take a lesson from our brother scientists. Perhaps we should use the two stage approach. Do basic research on a long range basis using the language that we must use within our own group and then become the extension person ourselves or work with our state consultants and supervisors to help them communicate the results to teachers. We better take the lead because we're the only ones out there in the field of research. We must do long range research and we must involve teachers in the planning.

I felt the committee delivered an excellent report on the problems of the profession which need attention. I see two kinds of implications which are based upon what we have heard during this seminar. The first point is that we should synthesize what we already know. Secondly, I believe we should mobilize the talent and time we have for more systematic planning. Thirdly, I believe we should organize the time and talent we have for more effective and efficient use of what has already been done. Fourthly, I believe we need to publicize to teachers, the general lay public and to legislators what we already know.

Now let me go to five main areas of research and look at a second kind of implication. First in the area of curriculum, I believe we can synthesize what we know by doing historical studies. I've been in the field 24 years

and it seems that when I got into research only experimental or descriptive studies were good and worthwhile. I have found that many of my brother scientists feel that a library research study is an excellent use of time. Perhaps we are missing the boat in not directing some of our doctorial students to do some sophisticated historical studies. Studies of this type could be extremely useful in redesigning and evaluating the preservice and graduate programs in teacher education.

The second area is funding. We need to know more about what has happened and why. We have done enough talking about funding. Perhaps we might be able to mobilize our efforts to determine why the funding has been adjusted from state to state. Perhaps we need to look at some of the states that have held their funding levels so help could be given to the states that have slipped.

Thirdly, we have already learned a tremendous amount of material in the teacher education area. Let's organize what we already know and evaluate what is actually working. We go home and become so involved and busy in our own states that we haven't the time to compare what we are doing with what is being done in other states. Maybe an entire research conference could be devoted to designing a project to do comparative analysis of what each of us is doing. We seem to be able to exchange ideas but we don't do it in a systematic manner so that tight comparisons can be made.

We have given a lot of lip service to the teacher shortage situation. I believe if we mobilize for some systematic investigations we can find factors effecting the shortage at the regional and national levels that would be helpful to us. Last year in Nebraska, we recruited students on our campus that were undecided about a major. We went to the governor and said, "We need some help from you. Will you help us?" He did. That along with some other activities increased our undergraduate enrollment by 75 percent.

Evaluation is the fifth area. The first thing I think of when evaluation is mentioned is advisory committees. Let's use them more extensively. Use them to publicize what we have found out. Let's do more team planning by researchers.

To summarize, the one big idea that came to me as I listened throughout the seminar was let's look for ways that we can mobilize our efforts and do more team planning in teacher education. We need to locate the approved practices applicable to agricultural education. As a high school vo-ag teacher, I used approved practices as a vehicle to teach what the student should apply. Maybe there are ways we can synthesize what we already know in an attempt to identify the approved practices in teacher education.

Let's take advantage of our autonomy. I have the autonomy to make the decision about what I want to research. By writing a five year proposal for our experiment station, I have the responsibility to design the objectives I will follow during those five years. That's a great deal of autonomy for me as a professional scientist. Here's a challenge for you younger men. Take

advantage of your autonomy as a young scientist. Find out what those of us who have been in the field a bit longer have done and look for a niche which will allow you to locate a longitudinal area for study that is new and different.

Clarence Cunningham, The Ohio State University

I have only three points to make.

Number one - programs, program emphasis, advisory committees, and involvement of employers and other clientele in planning should be evaluated to determine effectiveness not only from the point of view of improving programs but to maintain or acquire support. I think there is a whole base of research there which needs to be dealt with.

The second item I am concerned about is the relationships which exists in our whole agricultural education complex. If we look at most counties in the North Central Region states, we find there are lots of tax dollars going into such agencies as vocational education, cooperative extension, FHA, SCS, etc. How can this whole complex fit together to best serve the needs of the clientele? I'm concerned about how we can help design the best teacher education program. One in which the teachers learn how to utilize the whole complex. How can we design educational programs for people in other agricultural agencies to help them interrelate so we can maximize the benefits of the agricultural tax dollars being used?

My third point is I hope we will be challenged as a result of being here to do more programmatic research. Hopefully several of us will get together on a multi-state basis and develop some regional research projects. We can tap the North Central Region Experiment Station Directors for funding as well as use some vocational education monies. If we join hands, I think we will be in a much better position to acquire support from the experiment station directors.

Conference Summary

by J. David McCracken
The Ohio State University

I would like to express my personal appreciation to the General Chairman of our program, Dr. Warmbrod. He has exhibited excellent leadership to each of the committees. I also would like to thank each session chairman. I think the session chairmen did a tremendous job of putting together their parts of the seminar.

How does one summarize a conference? I suppose one could review and synthesize but that would take too long and that would not make you happy. I would like to summarize in a different way. I would like to report to you the ways I have personally been challenged and some of the things that I would like to have some influence upon based upon the inputs I received during this conference. First I felt challenged throughout the conference to develop a programmatic research effort of my own; to develop some of my own personal goals concerning a research area and work on that over a period of years. I would challenge each of you to do a similar kind of thing. Secondly, I would challenge you to be more realistic concerning project scope and depth. Let's not try to solve all the problems of the world in one project and then not do it well. I think perhaps we need to "cut off what we can chew." We need to continue our personal research efforts as individuals whether or not we have funding. Each of can conduct research on our areas of responsibility. I see no need of agricultural educators doing research outside of agricultural education. We have enough to research within our field. Leave psychology to the psychologists, sociology to the sociologists and let's do research in agricultural education.

I would encourage department research committees or department staffs to outline programmatic goals for research within their departments and involve those in the effort who might utilize the results of the research. Departmental advisory committees can assist in this effort. I would like for each of us to consider it a personal challenge to continue to develop our own personal research expertise, through reading, through inservice education, through attendance at conferences and in other manners.

I think we should encourage more of our graduate students to work in the areas of our own faculty expertise. Build upon the expertise of the faculty in the department and extend that to the graduate students. We need to begin with high-level policy makers and attempt to influence the funding of agricultural education research. These are policy makers in experiment stations and policy makers in vocational education. Each of us should carve out an area of research in agricultural education in which we will be a scholar and become recognized as such.

We have had many ideas suggested for further research. I am not going to list them all. I hope you picked up many ideas that you can use as you to back to your institutions.

With that let's go home with a positive attitude towards growth, development, and improvement of agricultural education through research. We can then report these things at Iowa State next year.

Thanks for coming to the conference. We in Ohio have appreciated your being here.

APPENDIX A

Central Region Research Conference
in
Agricultural Education

The Ohio State University
Columbus, Ohio

Tuesday, August 3, 1976

8:30 - 9:30 Registration
Fawcett Center for Tomorrow

9:30 - 11:30 First General Session
Fawcett Center for Tomorrow

Presiding - Ralph E. Bender
Introductions - Ralph E. Bender
Welcome and Challenge - Roy M. Kottman, Dean, College of Agriculture, Home Economics and Natural Resources, The Ohio State University

Overview of the Conference - J. Robert Warmbrod

Keynote Address - "Research in Agricultural Education from a Different Perspective"
Alfred H. Krebs, Vice President, Special Projects, Virginia Polytechnic Institue and State University, Blacksburg, Virginia

1:15 - 4:15 Second General Session
Fawcett Center for Tomorrow

Presiding - William L. Hull
Topic - Professional Competences of Vocational Agriculture Instructors: The State of the Art and the Science
Presenter - Glen C. Shinn, University of Missouri
Panel of Reactors - Kenny Gray, The Center for Vocational Education
Eddie Moore, Michigan State University
Gary Moore, Purdue University

Topic - Attitude Development as a part of Teacher Education Programs
Presenter - David L. Howell, Purdue University
Panel of Reactors - Kirby Barrick, State Supervisor, Ohio
Benton Bristol, Illinois State University
Clark Hanson, South Dakota State University

5:45 p.m. Family Picnic - Pig Roast
O.S.U. Golf Course

Wednesday, August 4, 1976

8:30 - 11:30 Third General Session
Fawcett Center for Tomorrow

Concurrant refereed paper sessions

Session A.
Presiding - L.H. Newcomb
Identification of the Occupational Competencies needed in the area of agri-chemicals
David Howell and William Hamilton, Purdue University

A Cost-effective Analysis of Selected Vocational Education Programs in local Comprehensive High Schools and Area Vocational Centers

Edgar Yoder, The Ohio State University
Reactors - David Williams, Iowa State University
Paul Hemp, University of Illinois

Session B.
Presiding - Wayne M. Keffer
Factors Related to the Success of New Mexico Vocational Agriculture Teachers as FFA Advisors.
Paul Vaughn, Virginia Polytechnic Institute and State University

Factors Associated with the Success of Supervised Farming Programs in Virginia High School Students -
Martin McMillion, Virginia Polytechnic Institue and State University

The Effect of Instructional Materials in the Leadership and Character Development of Vocational High School Students in Indiana
David Howell and William Richardson, Purdue University
Reactors - Vernon Luft, North Dakota State University
John Thompson, University of Wisconsin

1:00 - 4:30 Fourth General Session
The Center for Vocational Education, Room 1C

Presiding - Norval L. Mcaslin and Robert E. Norton
Improving Research in Departments of Agricultural Education
Robert E. Taylor, Executive Director, the Center and Associate Dean, Colleges of Education and Agriculture, Home Economics, and Natural Resources, the Ohio State University

Research and Development at the Center for Vocational Education:
Performance Based Teacher Education - Robert E. Norton, The Center

Instruments for Evaluating Local Programs - Norval L. McCaslin, The Center

Curriculum Materials from National Defense Organizations - Wesley E. Budke, The Center

Metric Education Instructional Materials for Vocational Agriculture -
Joel H. Magisos, The Center

5:45 pm Dinner for Husbands and Wives, O.S.U. Faculty Club

Thursday, August 5th, 1976

8:30 - 11:50 Fifth General Session
Fawcett Center for Tomorrow

Presiding - Clarence J. Cunningham and James E. Dougan
Business Meeting
Research Needs in Agricultural Education
Problems of the Profession Needing Attention - A Preliminary Report of a Study
Robert R. Stewart, University of Missouri

Implications for Program Planning and Research as seen by the Panel of Reactors Representing State Supervision and Teachers
John Murray, NVATA President, Minnesota
Kirby Barrick, State Supervisor, Ohio
James E. Dougan, Director, Ohio Agricultural Education Service

Implications for Program Planning and Research as seen by the Panel of Reactors representing Teacher Educators.

Panel -
Paul Marvin, University of Minnesota
Harry Gardner, Michigan State University
Roy Dillon, University of Nebraska
Clarence Cunningham, The Ohio State University

General Discussion
Conference Summary - J. David McCracken, The Ohio State University

PROGRAM FOR WIVES

Tuesday, August 3, 1976

8:30 - 9:30 Hospitality and Registration

(Arrangements will be made for sightseeing throughout the conference.)

Suggested activities:
German Village
The Continent and French Market
The Ohio Historical Village and Museum
The State Capitol Building and Tower
Shopping Downtown - Lazarus and the Union

evening Family Picnic

Wednesday, August 4, 1976

9:30 - 11:00 Get-acquainted coffee at the Warmbrod's, 3867 Mountview Road.

evening Dinner for husbands and wives

CONFERENCE COMMITTEES

J. Robert Warmbrod, General Chairman

Program: J. David McCracken, Chairman
L.H. Newcomb
Ralph E. Bender
Clarence J. Cunningham
William L. Hull
Norval L. McCaslin
Robert E. Norton
Larry D. Householder
Wayne M. Keffer
James E. Dougan

Registration and Housing:	Richard H. Wilson, Chairman John T. Starling Joseph A. Gliem Richard E. Young Wayne R. Longbrake John W. Dickens
Meals and Recreation:	Gilbert S. Guiler, Chairman Leon W. Boucher David D. Jenkins James A. Knight
Proceedings:	Larry H. Erpelding
Spouse's Activities:	Cathy Warmbrod, Chairman Jackie McCracken Donna Erpelding Beverly Newcomb Harriett Bender Ginger Boucher Barbara McCaslin Ruth Wilson Muriel Guiler

APPENDIX B

MINUTES OF THE BUSINESS MEETING
August 5, 1976

Dr. J. Robert Warmbrod called the business meeting to order in the Fawcett Center for Tomorrow at 8:40 a.m.

Dr. Bennie Byler invited the Central States Region teacher educators, supervisors and teachers to attend the 1977 Research Conference in Agricultural Education on the Iowa State University campus. Dr. Paul Marvin moved to accept Dr. Byler's invitation. The motion was seconded and carried. Dr. Byler announced the dates of the conference would be August 2, 3 and 4, 1977. The conference will be housed in the Continuing Education Building. He suggested that interested individuals plan to attend a planning meeting held during the Central States Seminar in February in Chicago.

Dr. Warmbrod introduced Dr. Ralph Bender, member of the FFA Board of Directors, for a report of National FFA happenings. Dr. Bender reported that FFA membership and Foundation receipts are at an all time high. Two groups of students representing postsecondary and pre-ninth grade programs are seeking affiliation with the FFA. The new addition to the FFA Center is nearing completion. The Alumni Association will establish January 1 as the beginning of the membership year.

Dr. Warmbrod thanked everyone for participating in the Research Conference.

Dr. Eddie Moore commended Dr. Warmbrod and the Ohio State faculty for a high quality research conference.

Meeting adjourned.

APPENDIX C

Participants

Participant	State/Institution	Position
Dewey Adams	The Ohio State Univ.	Center for Vocational Ed.
Kabba Bangurah	Univ. of Missouri	Graduate Student
Kirby Barrick	Ohio	State Supervisor
Ralph Bender	The Ohio State Univ.	Teacher Educator
Patrick Bennett	Michigan State Univ.	Graduate Student
Frank Bobbitt	Michigan State Univ.	Teacher Educator
Leon Boucher	The Ohio State Univ.	Teacher Educator
Benton Bristol	Illinois State Univ.	Teacher Educator
Wesley Budke	The Ohio State Univ.	Center for Vocational Ed.
Ben Byler	Iowa State Univ.	Teacher Educator
Harold Crawford	Iowa State Univ.	Teacher Educator
Clarence Cunningham	The Ohio State Univ.	Cooperative Extension Ed.
Ken Davis	The Ohio State Univ.	Graduate Student
John Dickens	The Ohio State Univ.	Graduate Student
Roy Dillon	Univ. of Nebraska	Teacher Educator
James Dougan	Ohio	Ag. Education Division
Larry Erpelding	The Ohio State Univ.	Teacher Educator
Harrison Gardner	Michigan State Univ.	Teacher Educator
Joseph Geker	Michigan State Univ.	Graduate Student
Joe Gliem	The Ohio State Univ.	Teacher Educator
Kenney Gray	The Ohio State Univ.	Center for Vocational Ed.
Gilbert Guiler	The Ohio State Univ.	Teacher Educator
Russell Guin	Illinois	Interstate Printers and Publishers
Bill Hamilton	Purdue University	Teacher Educator
Clark Hanson	South Dakota State U.	Teacher Educator
Paul Hemp	Univ. of Illinois	Teacher Educator
Alden Hilliker	The Ohio State Univ.	Graduate Student
George Houk	The Ohio State Univ.	Graduate Student
David Howell	Purdue University	Teacher Educator
William Hull	The Ohio State Univ.	Center for Vocational Ed.
David Jenkins	The Ohio State Univ.	Cooperative Extension Ed.
Carlton Johnson	The Ohio State Univ.	Teacher Educator
Wayne Keffer	The Ohio State Univ.	Graduate Student
Jim Knight	The Ohio State Univ.	Teacher Educator
Dean Kottman	The Ohio State Univ.	Dean, College of Ag., Home Economics and Natural Resources
James Legacy	Purdue University	Teacher Educator
Wayne Longbrake	The Ohio State Univ.	Graduate Student
Tom Luellen	The Ohio State Univ.	Graduate Student
Vernon Luft	North Dakota State U.	Teacher Educator

Participant	State/Institution	Position
Joel Magisos	The Ohio State Univ.	Center for Vocational Ed.
Paul Marvin	Univ. of Minnesota	Teacher Educator
N.L. McCaslin	The Ohio State Univ.	Center for Vocational Ed.
David McCracken	The Ohio State Univ.	Teacher Educator
Martin McMillion	Virginia Polytechnic Institute & S. U.	Teacher Educator
Ray Miller	The Ohio State Univ.	Teacher Educator
Gary Moore	Purdue University	Teacher Educator
Eddie Moore	Michigan State Univ.	Teacher Educator
John Murray	Minnesota	President of N.V.A.T.A.
L.H. Newcomb	The Ohio State Univ.	Teacher Educator
Sarah Nipah	The Ohio State Univ.	Graduate Student
Curtis Norenberg	Univ. of Minnesota	Teacher Educator
Robert Norton	The Ohio State Univ.	Center for Vocational Ed.
Arthur Purcell	Univ. of Illinois	Graduate Student
Bill Richardson	Purdue University	Teacher Educator
Harlan Ridenour	The Ohio State Univ.	Ag.Ed.Curr.Mat. Service
Boyd Robinson	Michigan State Univ.	Graduate Student
Roger Roediger	The Ohio State Univ.	Ag.Ed.Curr.Mat. Service
Earl Russell	The Ohio State Univ.	Center for Vocational Ed.
Glen Shinn	Univ. of Missouri	Teacher Educator
Bob Stewart	Univ. of Missouri	Teacher Educator
John Thompson	Univ. of Wisconsin	Teacher Educator
Robert Walker	Univ. of Illinois	Teacher Educator
Warren Weiler	Ohio	Ag. Ed. Division, Retired
David Williams	Iowa State Univ.	Teacher Educator
Richard Wilson	The Ohio State Univ.	Teacher Educator
Willard Wolf	The Ohio State Univ.	Teacher Educator Emeritus
Ralph Woodin	The Ohio State Univ.	Teacher Educator Emeritus
Ed Yoder	The Ohio State Univ.	Teacher Educator
Richard Young	The Ohio State Univ.	Cooperative Extension Service

APPENDIX D

Locations of the Annual
Research Conference In
Agricultural Education

Central States Region

1947	University of Chicago	1962	Iowa State University
1948	University of Minnesota	1963	Michigan State University
1949	University of Illinois	1964	University of Missouri
1950	Purdue University	1965	University of Wisconsin
1951	Iowa State College	1966	University of Nebraska
1952	Michigan State College	1967	Ohio State University
1953	University of Missouri	1968	University of Kentucky
1954	University of Wisconsin	1969	University of Illinois
1955	Ohio State University	1970	University of Minnesota
1956	University of Nebraska	1971	Purdue University
1957	University of Kentucky	1972	South Dakota State University
1958	University of Illinois	1973	Southern Illinois University
1959	Kansas State University	1974	Michigan State University
1960	University of Minnesota	1975	University of Missouri
1961	Purdue University	1976	Ohio State University